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**646 Questions + Answers**

**of the**

**CFA EXAM**

**Level 1**

**Study Session :**  
**Corporate Finance**

## **Introduction by the Author :**

**Hi there, CFA fellows, here you are . You see , it doesn't need to be an expensive prep course to get first class preparation for the CFA exams.**

**The following questions are original CFA AIMR questions and not just composed by prep course providers. They all come with a clear answer.**

**In order to understand why the questions are commented by “answer is correct / incorrect” it is important to know that all questions have automatically been responded with the first (and only the first ) answer.**

### **Your CFA-Aficionado**

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And now here we go :

Rollins Corporation is constructing its MCC schedule. Its target capital structure is 20 percent debt, 20 percent preferred stock, and 60 percent common equity. Its bonds have a 12 percent coupon, paid semiannually, a current maturity of 20 years, and sell for \$1,000. The firm could sell, at par, \$100 preferred stock, which pays a 12 percent annual dividend, but flotation costs of 5 percent would be incurred. Rollins' beta is 1.2, the risk-free rate is 10 percent, and the market risk premium is 5 percent. Rollins is a constant growth firm, which just paid a dividend of \$2.00, sells for \$27.00 per share, and has a growth rate of 8 percent. The firm's policy is to use a risk premium of 4 percentage points when using the bond-yield-plus-risk-premium method to find  $k(s)$  (component cost of retained earnings). The firm's net income is expected to be \$1 million, and its dividend payout ratio is 40 percent. Flotation costs on new common stock total 10 percent, and the firm's marginal tax rate is 40 percent.

What is Rollins' cost of preferred stock?

- \* 12.6%
- \* 13.2%
- \* 11.0%
- \* 12.0%
- \* 10.0%

That answer is correct!

$K(ps)$  (cost of preferred stock) =  $\$12/\$100 (0.95) = 12.6\%$ .

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Despite relative congruence in their ranking methods, NPV and MIRR will sometimes produce conflicting answers. Which of the following correctly illustrates an example in which the two methods would likely produce conflicting rankings?

- I. When examining projects with non-normal cash flows
- II. When examining projects that differ substantially in scale
- III. When examining independent projects
- IV. When examining projects that differ substantially in their lifespan

- \* I and III
- \* I and II
- \* II and IV
- \* II and IV

That answer is incorrect.

Correct answer:

II and IV

While the MIRR method is designed to tackle many of the problems associated with the traditional IRR calculation, there exist situations in which the MIRR will produce rankings which conflict with those produced by the NPV method. Specifically, when mutually-exclusive projects whose lifespans or scale differ substantially are being examined. In these situations, the NPV calculation should be relied on, as this method is considered to produce the correct results.

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Monte Carlo simulation

- \* All of the answers are correct.
- \* Is capable of using probability distributions for variables as input data instead of a single numerical estimate for each variable.
- \* Produces both an expected NPV (or IRR) and a measure of the riskiness of the NPV or IRR.
- \* None of the answers are correct.
- \* Can be useful for estimating a project's stand-alone risk.

That answer is correct!

These are all true.

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Proponents of which of the following theories would claim that companies seek to balance the tax-shelter benefits of debt financing with the increased interest rates and risk of bankruptcy that come with increased debt levels?

- \* Modigliani & Miller's "with-taxes" Theory of Capital Structure
- \* Bird-in-the-Hand Theory
- \* Modigliani & Miller's Theory of Capital Structure
- \* Tax Preference Theory

- \* Signaling Theory
- \* Trade-off Theory of Leverage

That answer is incorrect.

Correct answer:

Trade-off Theory of Leverage

The Trade-off Theory of Leverage claims that firms will seek to balance the tax-shelter benefits of debt financing with the increased interest costs and risk of bankruptcy that come with increased debt levels. The Trade-off Theory of Leverage came about largely from criticisms raised against the Modigliani and Miller Theory of Capital Structure under the "with-taxes" assumption. M&M claimed that, under a restrictive set of assumptions, the value of firms would be maximized only when their capital structure is comprised of 100% debt. The Trade-off Theory of Leverage proposed a more realistic and moderate answer to the Capital Structure debate, and remains an important milestone in the field of Pure Finance.

Photon Corporation has a target capital structure of 60 percent equity and 40 percent debt. The firm can raise an unlimited amount of debt at a before-tax cost of 9 percent. The company expects to retain earnings of \$300,000 in the coming year and to face a tax rate of 35 percent. The last dividend was \$2 per share and the growth rate of the company is constant at 6 percent. If the company needs to issue new equity, then the flotation cost will be \$5 per share. The current stock price is \$30. Photon has the following investment opportunities:

Project	Cost	IRR
1	\$100,000	10.5%
2	\$200,000	13.0
3	\$100,000	12.0
4	\$150,000	14.0
5	\$75,000	9.0

What is the company's optimal capital budget?

- \* \$150,000
- \* \$450,000
- \* \$350,000
- \* \$550,000
- \* \$625,000

That answer is incorrect.

Correct answer:

\$450,000

Calculate the retained earnings break point (BPRE) as  $\$300,000/0.6 = \$500,000$ . Calculate  $k_s$  as  $D1/P_0 + g = \$2(1.06)/\$30 + 6\% = 13.07\%$ . Calculate  $k_e$  as  $D1/(P_0 - F) + g = \$2(1.06)/(\$30 - \$5) + 6\% = 14.48\%$ . Find WACC below BPRE as:  $WACC = 0.6(13.07\%) + 0.4(9\%)(1 - 0.35) = 10.18\%$ . Thus, up to \$500,000 can be financed at 10.18%. Find WACC above BPRE as:  $WACC = 0.6(14.48\%) + 0.4(9\%)(1 - 0.35) = 11.03\%$ . Thus, financing in excess of \$500,000 costs 11.03%. Projects 2, 3, and 4 all have IRRs exceeding either WACC and should be accepted. These projects require \$450,000 in financing. Project 1 is the next most profitable project.

Given its cost of \$100,000, half or \$50,000 can be financed at 10.18% and the other half must be financed

at 11.03%. The relevant cost of capital for Project 1 is then  $0.5(10.18\%) + 0.5(11.03\%) = 10.61\%$ . Since Project 1's IRR is less than the cost of capital, it should not be accepted. The firm's optimal capital budget is \$450,000.

-----

A stock has an expected dividend growth rate of 4.9%. The firm has just paid a dividend of \$2.5 per share. With a required rate of return of 10%, the stock is trading at \$42.8. The stock is:

- \* overpriced.
- \* insufficient information.
- \* fairly priced.
- \* under-priced.

That answer is incorrect.

Correct answer:

under-priced.

The fair price of the stock with a required rate of return,  $r$  and a dividend growth rate,  $g$ , is given by  $P = D1/(r-g)$ , where  $D1 = D_0(1+g)$  = dividend to be paid next year. In this case, the fair price of the stock equals  $2.5 \times 1.049 / (10\% - 4.9\%) = \$51.42$ . Thus, the stock is under-priced by  $\$(51.42 - 42.8) = \$8.62$ .

-----

Which of the following is not considered a capital component?

- \* All of these are considered capital components
- \* Preferred stock
- \* Common stock
- \* Long-term debt
- \* Retained earnings

That answer is correct!

The four major capital components are debt, preferred stock, retained earnings, and new issues of common stock.

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Sun State Mining Inc., an all-equity firm, is considering the formation of a new division, which will increase the assets of the firm by 50 percent. Sun State currently has a required rate of return of 18 percent, U.S. Treasury bonds yield 7 percent, and the market risk premium is 5 percent. If Sun State wants to reduce its required rate of return to 16 percent, what is the maximum beta coefficient the new division could have?

- \* 2.0
- \* 1.0
- \* 2.2
- \* 1.6
- \* 1.8

That answer is incorrect.

Correct answer:

1.0

Old assets = 1.0.	New assets = 0.5.	Total assets = 1.5.
Old required rate:	New required rate:	
$18\% = 7\% + (5\%)b$	$16\% = 7\% + (5\%)b$	
beta = 2.2.	beta = 1.8.	

New b must not be greater than 1.8, therefore

$0.3333(b) = 0.3333$

$b = 1.0$ .

Therefore, beta of the new division cannot exceed 1.0.

-----

Which of the following is not considered a relevant concern in determining incremental cash flows for a new product?

- \* The cost of a product analysis completed in the previous tax year and specific to the new product.
- \* All of these are relevant.
- \* The use of factory floor space which is currently unused but available for production of any product.
- \* Shipping and installation costs associated with preparing the machine to be used to produce the new product.
- \* Revenues from the existing product that would be lost as a result of some customers switching to the new product.

That answer is correct!

The product analysis cost is considered a sunk cost and is not relevant.

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Which of the following statements is correct?

- \* The primary advantage of simulation analysis over scenario analysis is that scenario analysis requires a relatively powerful computer, coupled with an efficient financial planning software package, whereas simulation analysis can be done using a PC with a spreadsheet program or even a calculator.
- \* All of these answers are correct.
- \* Sensitivity analysis is incomplete because it fails to consider the range of likely values of key variables as reflected in their probability distributions.
- \* In comparing two projects using sensitivity analysis, the one with the steeper lines would be considered less risky, because a small error in estimating a variable, such as unit sales, would produce only a small error in the project's NPV.
- \* Sensitivity analysis is a risk analysis technique that considers both the sensitivity of NPV to changes in key variables and the likely range of variable values.

That answer is incorrect.

Correct answer:

Sensitivity analysis is incomplete because it fails to consider the range of likely values of key variables as reflected in their probability distributions.

A project's stand-alone risk depends on (1) the sensitivity of NPV to changes in key variables and (2) the range of likely values of these variables as reflected in their probability distribution. Sensitivity analysis considers only the first factor.

-----

The Clientele Effect theory implies that investors in the low tax brackets will prefer:

- \* none of these answers.
- \* high capital gains.
- \* high dividend payouts.
- \* low dividend payouts.

That answer is incorrect.

Correct answer:

high dividend payouts.

The Clientele Effect is based on the presumption that different groups of investors will prefer different dividend policies based on their tax status and their need for current versus future income requirements. Hence, investors who face high taxes on current income will tend to avoid stocks with high pay-out ratios. This lowering of demand for such stocks will tend to depress their prices and to take advantage of this; investors in low tax brackets would gravitate toward them. To this, add the fact that usually, investors in low tax brackets with sufficient capital to invest tend to be either people who are old and retired or institutions like pension funds. Both these groups have a higher need for current income but are sensitive to liquidation of capital. They therefore prefer their income from stocks to be in the form of dividends rather than from the sale of their stock holdings.

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Alyeska Salmon Inc., a large salmon canning firm operating out of Valdez, Alaska, has a new automated production line project it is considering. The project has a cost of \$275,000 and is expected to provide after-tax annual cash flows of \$73,306 for eight years. The firm's management is uncomfortable with the IRR reinvestment assumption and prefers the modified IRR approach. You have calculated a cost of capital for the firm of 12 percent. What is the project's MIRR?

- \* 17.0%
- \* 15.0%
- \* 12.0%
- \* 14.0%
- \* 16.0%

That answer is incorrect.

Correct answer:

16.0%

$TV = \$73,306(FVIFA(12\%,8)) = \$73,306(12.300) = \$901,663.80.$   
 $\$275,000 = \$901,663.80 / (1 + MIRR)^8$

$(1 + \text{MIRR})^8 = (\text{FVIF}(\text{Irr}, 8)) = 3.27869$ .  
Look in table: Periods = 8, I = 16%. MIRR = 16%.

Alternate method  
 $3.27869^{1/8} = 1 + \text{MIRR}$   
MIRR = 16%.

-----

Consider the following argument: "The cost of common stock should decrease as the dividend payout is increased because investors are more certain of receiving these dividends than the capital gains which are supposed to be derived from retained earnings."

This statement applies best to which of the following financial theories? Choose the best answer.

- \* Tax Preference Theory
- \* Dividend Irrelevance Theory
- \* Tax Irrelevance Theory
- \* Dividend Relevance Theory
- \* Bird-in-hand Theory

That answer is incorrect.  
Correct answer:  
Bird-in-hand Theory

The Bird-in-the-Hand Theory came about as a refutation of Modigliani and Miller's Dividend Irrelevance Theory. The founders of the Bird-in-the-Hand Theory, Myron Gordon and John Lintner, stated that investors are more confident in the fact that they will receive dividends versus capital gains. So said, the cost of common stock should decrease as the payout ratio is increased.

The Tax Preference Theory states that investors prefer capital gains to dividends, and this is due to the structure of tax rates. Specifically, dividends are typically taxed at a higher rate than capital gains, and are in this respect less attractive.

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An investment project has an initial cost, and then generates inflows of \$50 a year for the next five years. The project has a payback period of 3.6 years. What is the project's internal rate of return (IRR)?

- \* 12.05%
- \* 13.47%
- \* 15.89%
- \* 14.66%
- \* 11.18%

That answer is correct!

Investment cost = \$180.  
 $\text{CF}(0) = -180$   
 $\text{CF}(1-5) = 50$   
Solve for IRR = 12.05%.



-----

According to the signaling theory, if a firm issues debt capital to finance a project, the firm's management must consider the project to be \_\_\_\_\_.

- \* none of these answers
- \* likely to raise the probability of bankruptcy
- \* very desirable
- \* not very profitable

That answer is incorrect.

Correct answer:

very desirable

According to the signaling theory of capital structure, a firm will try to raise debt capital when the project's returns are deemed very favorable and vice versa. The firm is signaling that the project has sufficient cash flows to pay back the debt.

-----

The return on the best alternative use of an asset, or the highest return that will not be earned if funds are invested in a particular project is known as which of the following terms?

- \* Sunk Cost
- \* Cannibalization
- \* Opportunity Cost
- \* Externality
- \* Incremental Cash Flow

That answer is incorrect.

Correct answer:

Opportunity Cost

Opportunity cost is defined as the return on the best alternative use of an asset, or the highest return that will not be earned if funds are invested in a particular project

-----

Suppose Congress votes to raise the personal tax rate on interest and dividend income. However, it does not change the capital gains tax or the corporate tax rates. This will have the effect of:

- \* increasing the reliance on debt financing.
- \* increasing the reliance on retained earnings as capital.
- \* decreasing the reliance on equity capital.
- \* decreasing the sizes of seasoned equity offerings.

That answer is incorrect.

Correct answer:

increasing the reliance on retained earnings as capital.

As personal tax rates increase, firms have to modify their reliance on different capital markets so as to minimize the costs imposed on debt and equity investors. An increase in interest and dividend income makes debt and dividend payouts costlier. On the other hand, since capital gains are not affected, firms will tend to decrease their dividend pay-out ratios and bank on retained earnings to finance their capital requirements.

-----  
Which of the following is correct?

\* The drug industry has a high debt to common equity ratio because their earnings are very stable and thus, can support the large interest costs associated with higher debt levels.

\* Since most stocks sell at or around their book values, using accounting values provides an accurate picture of a firm's capital structure.

\* Wide variations in capital structures exist between industries and also between individual firms within industries and are influenced by unique firm factors including managerial attitudes.

\* Utilities generally have very high common equity ratios due to their need for vast amounts of equity supported capital.

\* Generally, debt to total assets ratios do not vary much among different industries although they do vary for firms within a particular industry.

That answer is incorrect.

Correct answer:

Wide variations in capital structures exist between industries and also between individual firms within industries and are influenced by unique firm factors including managerial attitudes.

Wide variations in the use of financial leverage exist across industries and among individual firms in each industry. Computer and pharmaceutical firms do not use much debt because the uncertainties in these industries that are cyclical, research-oriented, or subject to huge product liability suits, which would make the high use of debt unwise. The airline and utility firms use relatively more debt, with the utilities using large amounts of long-term debt.

-----  
The initial investment outlay consists of which of the following?

I. Up-front costs of the project's fixed assets.

II. Flotation costs associated with raising the necessary capital.

III. Increases in net working capital.

IV. Present value of all interest expenses associated with the project capital.

\* II only

\* I, II & IV

\* I, II & III

\* I, II, III & IV

\* I & III

\* III only

\* I only

\* IV only

That answer is incorrect.

Correct answer:

I & III

The initial investment outlay consists of up-front costs of the project's fixed assets and any increases in net working capital. Costs involved in raising the finances are not part of the initial outlay.

-----  
Which of the following statements is most correct?

- \* The CAPM approach is typically used to estimate a firm's flotation cost adjustment factor, and this factor is added to the DCF cost estimate.
- \* These statements are all incorrect.
- \* In practice (as opposed to in theory), the DCF method and the CAPM method usually produce exactly the same estimate for  $k(s)$ .
- \* The risk premium used in the bond-yield-plus-risk-premium method is the same as the one used in the CAPM method.
- \* Under normal conditions, the CAPM (Capital Asset Pricing Model) approach to estimating a firm's cost of retained earnings gives a higher estimate than the DCF (Discounted Cash Flow) approach.

That answer is incorrect.

Correct answer:

These statements are all incorrect.

All are incorrect. Under the CAPM approach, it is at best difficult to obtain correct estimates of the inputs require to make it operational. The same could be said about the growth rate input under the DCF approach. The risk premium under the bond-yield-plus-risk premium approach is purely judgmental and results in a ballpark estimate.

-----  
Which of the following statements is most correct?

- \* If a company does a 2-for-1 stock split, its stock price will roughly double.
- \* An open-market dividend reinvestment plan is likely to be attractive to companies that are looking to issue additional shares of common stock.
- \* All of these answers are correct.
- \* None of the answers are correct.
- \* Stock repurchases have the effect of reducing financial leverage.

That answer is incorrect.

Correct answer:

None of the answers are correct.

A new stock type of DRIP would result in raising new capital for the firm. Stock repurchases increase financial leverage. In a 2-for-1 stock split, the stock price will be halved.

-----  
A financial analyst with Smith, Kleen, & Beetchnutty is examining shares of Claypool Manufacturing for possible investment. Assume the following information:

Sales: \$50,000,000  
Fixed costs: \$33,000,000  
Variable costs: \$8,500,000  
Interest expense: \$900,000  
Tax rate: 35%  
Weighted Average Cost of Capital: 11.50%  
Beta coefficient: 0.96  
Common shares outstanding: 4,000,000

Using this information, what are the earnings per share (EPS) for Claypool Manufacturing?

- \* \$1.34
- \* \$1.40
- \* The answer cannot be determined from the information provided.
- \* \$1.70
- \* \$1.24
- \* \$1.11

That answer is incorrect.  
Correct answer:  
\$1.24

The EPS figure is perhaps the single most popular term in the field of conventional equity investments, along with the Price-to-Earnings Ratio (P/E). Any glance into financial media and business periodicals will undoubtedly uncover numerous instances in which the EPS figure is cited or discussed. While quite popular and useful, most investors, and many business professionals, undoubtedly do not understand the mechanics behind the EPS calculation, and an investigation into the components of EPS is a valuable learning experience. The EPS calculation is found by the following equation:

{EPS = [(Sales - Fixed Costs - Variable Costs - Interest Expense)(1 - Tax Rate)] / [# of Common Shares Outstanding]}

Additionally, the EPS figure can be found by:

{EPS = [(EBIT - Interest Expense)(1 - Tax Rate) / # of Common Shares Outstanding]}  
Incorporating the given information into the first EPS equation will yield the following: {EPS = [(\$50,000,000 - \$33,000,000 - \$8,500,000 - \$900,000)(1 - 0.35)] / 4,000,000} = \$1.24.

-----  
The net cash flow attributable to an investment project is known as which of the following terms?

- \* Sunk Cost
- \* Opportunity Cost
- \* Incremental Cash Flow
- \* Cannibalization
- \* Externality

That answer is incorrect.  
Correct answer:  
Incremental Cash Flow

Incremental cash flow is defined as the net cash flow attributable to an investment project.

-----

Following an internal investigation into her professional business activities, a financial analyst with Smith, Kleen & Beetchnutt admits that in her NPV and IRR calculations, she has failed to index all cash flows for the effects of anticipated inflation. However, the analyst claims that the discount rate she has used in her calculations does take into effect anticipated inflation.

Which of the following correctly describes the effects this will have on the NPV and IRR calculations?

- \* NPV will be biased downward, IRR will be biased upward
- \* NPV will be biased upward, IRR will be biased downward
- \* Both NPV and IRR will be biased downward
- \* Both NPV and IRR will remain unaffected
- \* NPV will be biased downward, IRR will be unaffected
- \* Both NPV and IRR will be biased upward

That answer is incorrect.  
Correct answer:  
Both NPV and IRR will be biased downward

By failing to index the cash flows of projects in her NPV analysis, while at the same time including an adjustment for inflation into the discount rate, this analyst has biased the NPV calculation downward. This is because the cash inflows are being understated by the inflation-adjusted discounting. This phenomenon will skew the NPV figure downward.

Remember that while the Internal Rate of Return calculation does not specify an explicit discount rate, rather calculates the discount rate that equates the cash inflows of a project with its cash outflows, the fact remains that the cash flows in the calculation have not been indexed for the effects of positive inflation. What has happened here is that cash flows have been understated, and this will bias the IRR calculation downward.

-----

Your company has decided that its capital budget during the coming year will be \$20 million. Its optimal capital structure is 60 percent equity and 40 percent debt. Its earnings before interest and taxes (EBIT) are projected to be \$34.667 million for the year. The company has \$200 million of assets; its average interest rate on outstanding debt is 10 percent; and its tax rate is 40 percent. If the company follows the residual dividend policy and maintains the same capital structure, what will its dividend payout ratio be?

- \* 35%
- \* 30%
- \* 15%
- \* 20%
- \* 25%

That answer is incorrect.

Correct answer:

25%

Capital budget = \$20 million.

Optimal capital structure: 60% equity, 40% debt.

EBIT = \$34.667 million.

Assets = \$200 million.

$k(d) = 10\%$ ;  $T = 40\%$ . Dividend Payout = ?

Debt =  $0.40(\$200 \text{ million}) = \$80 \text{ million}$ .

Interest =  $0.10(\$80 \text{ million}) = \$8 \text{ million}$ .

EBIT	\$34.667
-INT	8.000
EBT	\$26.667
Taxes (40%)	10.667
NI	\$16.000

Equity needed =  $0.60(\$20 \text{ million}) = \$12 \text{ million}$ .

Net Income	\$16
-Equity needed	12
Amount left for dividend	\$4

Dividend Payout =  $\$4/\$16 = 25\%$ .

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Modigliani and Miller (MM) argued that dividend policy is irrelevant. On the other hand, Gordon and Lintner (GL) argued that dividend policy does matter. GL's argument rests on the contention that

\* most investors will reinvest rather than spend dividends, so it would save investors money (taxes) if corporations simply reinvested earnings rather than paid them out as dividends.

\*  $k(s) = D1/P0 + g$  is constant for any dividend policy.

\* none of the answers are correct.

\* investors, because of tax differentials, value a dollar of expected capital gains more highly than a dollar of dividends.

\* because of perceived differences in risk, investors value a dollar of dividends more highly than a dollar of expected capital gains.

That answer is incorrect.

Correct answer:

because of perceived differences in risk, investors value a dollar of dividends more highly than a dollar of expected capital gains.

The main conclusion of MM's irrelevance theory is that dividend policy does not affect the required rate of return on equity. Gordon-Lintner disagreed stating that  $k(s)$  decreases as the dividend payout is increased because investors are less certain of receiving the capital gains which should result from retaining earnings than they are of receiving dividends. They said that investors value expected dividends more highly than expected capital gains because the dividend yield is less risky than the growth component in the total expected return equation,  $k(s) = D1/P0 + g$ .

MM disagreed and theorized that  $k(s)$  is independent of dividend policy, implying that investors are indifferent between dividends and capital gains.

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Gulf Electric Company (GEC) uses only debt and equity in its capital structure. It can borrow unlimited amounts at an interest rate of 10 percent so long as it finances at its target capital structure, which calls for 55 percent debt and 45 percent common equity. Its last dividend was \$2.20; its expected constant growth rate is 6 percent; its stock sells on the NYSE at a price of \$35; and new stock would net the company \$30 per share after flotation costs. GEC's tax rate is 40 percent, and it expects to have \$100 million of retained earnings this year. GEC has two projects available: Project A has a cost of \$200 million and a rate of return of 13 percent, while Project B has a cost of \$125 million and a rate of return of 10 percent. All of the company's potential projects are equally risky.

What is GEC's cost of equity from newly issued stock?

- \* 13.77%
- \* 13.33%
- \* 10.00%
- \* 12.66%
- \* 12.29%

That answer is correct!

$k(d)$  (interest rate on the firm's new debt) = 10%

$k(d)(1 - T)$  (after-tax-component cost of the debt) =  $10\%(0.6) = 6\%$ .

$D/A = 55\%$ ;  $D_0 = \$2.20$ ;  $g = 6\%$ ;  $P_0 = \$35$ ;  $P_N = \$35$ ;  $T = 40\%$ .

Retained earnings = \$100M;  $BP(RE) = \$100M / .45 = \$222.22M$ .

$k(s)$  (component cost of retained earnings) =  $\$2.33 / \$35 + 6\% = 12.66\%$ .

$k(e)$  (component cost of external equity) =  $\$2.33 / \$30 + 6\% = 13.77\%$ .

-----

Suppose changes in corporate law make it more difficult for debt holders to force companies into bankruptcies. This will cause firms to:

- \* raise more equity capital through retained earnings.
- \* either increase or decrease their debt levels.
- \* increase their debt-to-equity ratios.
- \* decrease their debt-to-equity ratios.

That answer is incorrect.

Correct answer:

either increase or decrease their debt levels.

It is tempting to assume that lower probability of bankruptcy will entice firms into borrowing more. However, remember that debt holders are not entirely stupid! They will factor in this change in the law and demand a higher yield and stricter covenants on corporate debt to compensate for the lower recourse they have against the firms. Depending on whether they actually underestimate or overestimate the effect and

also depending on whether the firms perceive that the debt holders have under- or overestimated the effect, companies could increase or decrease their debt levels.

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As the capital budgeting director for Chapel Hill Coffins Company, you are evaluating construction of a new plant. The plant has a net cost of \$5 million in Year 0 (today), and it will provide net cash inflows of \$1 million at the end of Year 1, \$1.5 million at the end of Year 2, and \$2 million at the end of Years 3 through 5.

Within what range is the plant's IRR?

- \* 17 - 18%
- \* 15 - 16%
- \* 18 - 19%
- \* 14 - 15%
- \* 16 - 17%

That answer is incorrect.

Correct answer:

18 - 19%

Time line: (In millions)

0	1	2	3	4	5 Years
-5	1	1	2	2	2

Financial calculator solution: (In millions)

Inputs:  $CF(0) = -5$ ;  $CF(1) = 1.0$ ;  $CF(2) = 1.5$ ;  $CF(3) = 2.0$ ;  $N(j) = 3$ .

Output:  $IRR\% = 18.37\%$ .

-----

A project that is intended to increase income is known as \_\_\_\_\_.

- \* Externality
- \* Replacement Project
- \* Cannibalization
- \* Opportunity Cost
- \* Expansion Project
- \* Low Cost Provider

That answer is incorrect.

Correct answer:

Expansion Project

An expansion project is defined as a project that is intended to increase income.



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A mutual fund manager is examining the financial and operating condition of a Questron Media Corporation, and has discovered the following information.

Sales: \$3,000,000  
Fixed costs: \$1,000,000  
Variable costs: \$300,000  
Interest expense: \$150,000  
Tax rate: 35%  
Weighted Average Cost of Capital: 14.75%  
Beta coefficient: 1.66  
Common shares outstanding: 1,321,000

Using this information, what are the earnings per share (EPS) for Questron Media?

- \* \$1.26
- \* \$1.47
- \* \$0.66
- \* \$0.76
- \* \$0.78
- \* \$0.89

That answer is incorrect.  
Correct answer:  
\$0.76

The EPS figure is perhaps the single most popular term in the field of conventional equity investments. Any glance into financial media and business periodicals will undoubtedly uncover numerous instances in which the EPS figure is cited. While quite popular and useful, many investors and business professionals do not truly understand the mechanics behind the EPS calculation, and an investigation into the components of EPS figure is a valuable learning experience. The EPS calculation is found by the following equation:

{EPS = [(Sales - Fixed Costs - Variable Costs - Interest Expense)(1 - Tax Rate)] / [# of Common Shares Outstanding]}

Additionally, the EPS figure can be found by:

{EPS = [(EBIT - Interest Expense)(1 - Tax Rate) / # of Common Shares Outstanding]}

Incorporating the given information into the first EPS equation will yield the following:

{EPS = [(\$3,000,000 - \$1,000,000 - \$300,000 - \$150,000)(1 - 0.35)] / 1,321,000} = \$0.7627

-----  
Dick Boe Enterprises, an all-equity firm, has a corporate beta coefficient of 1.5. The financial manager is evaluating a project with an IRR of 21 percent, before any risk adjustment. The risk-free rate is 10 percent, and the required rate of return on the market is 16 percent. The project being evaluated is riskier than Boe's average project, in terms of both beta risk and total risk. Which of the following statements is most correct?

- \* Riskier-than-average projects should have their IRRs increased to reflect their added riskiness. Clearly, this would make the project acceptable regardless of the amount of the adjustment.
- \* The accept/reject decision depends on the risk-adjustment policy of the firm. If the firm's policy were to reduce a riskier-than-average project's IRR by 1 percentage point, then the project should be accepted.
- \* The project should be accepted since its IRR (before risk adjustment) is greater than its required return.
- \* The project should be rejected since its IRR (before risk adjustment) is less than its required return.
- \* Projects should be evaluated on the basis of their total risk alone. Thus, there is insufficient information in the problem to make an accept/reject decision.

That answer is incorrect.

Correct answer:

The accept/reject decision depends on the risk-adjustment policy of the firm. If the firm's policy were to reduce a riskier-than-average project's IRR by 1 percentage point, then the project should be accepted.

$k(s) = 10\% + (16\% - 10\%)1.5 = 10\% + 9\% = 19\%$ .  
 Original IRR = 21%. 21% - Risk adjustment 1% = 20%.  
 Risk adjusted IRR = 20% >  $k(s) = 19\%$ .

-----

Consider the following information:

30-day treasury rate (Risk Free rate) 7.2%  
 Company XYZ Bond yield 10.2%  
 Beta 0.8  
 Risk Premium 4.0%  
 Credit Rating B-

Calculate Company XYZ's cost of retained earnings using the Bond-Yield-plus-Risk-Premium approach.

- \* 15.2%
- \* 12.2%
- \* 11.36%
- \* 17.4%
- \* 5.2%
- \* 14.2%

That answer is incorrect.

Correct answer:

14.2%

To estimate a firm's cost of retained earnings using the Bond-Yield-plus-Risk-Premium approach, simply take the company's bond yield and add the risk premium. In this case the cost of retained earnings = 10.2% + 4.0% = 14.2%.

-----

J. Ross and Sons Inc. has a target capital structure that calls for 40 percent debt, 10 percent preferred stock, and 50 percent common equity. The firm's current after-tax cost of debt is 6 percent, and it can sell as much debt as it wishes at this rate. The firm's preferred stock currently sells for \$90 a share and pays a dividend of \$10 per share; however, the firm will net only \$80 per share from the sale of new preferred

stock. Ross expects to retain \$15,000 in earnings over the next year. Ross' common stock currently sells for \$40 per share, but the firm will net only \$34 per share from the sale of new common stock. The firm recently paid a dividend of \$2 per share on its common stock, and investors expect the dividend to grow indefinitely at a constant rate of 10 percent per year.

What is the firm's cost of newly issued common stock?

- \* 16.5%
- \* 18.0%
- \* 10.0%
- \* 12.5%
- \* 15.5%

That answer is correct!

Cost of new common equity:

$$k(e) = (\$2.20/\$34) + 0.10 = 0.1647 = 16.5\%.$$

-----

Clay Industries, a large industrial firm, is in the process of developing a coal refining system which greatly increases the efficiency of coal as an energy source. However, the new system has been criticized as leading to a tremendous increase in emissions of CFTA, a dangerous carbon-based pollutant believed to be linked to thyroid cancer. While the firm is concerned about the possible risk to the public posed by the new system, the management of Clay Industries decides that the sales potential for the product outweighs both the risk to society and the liability exposure of the firm. Which of the following choices best describes this situation faced by Clay Industries?

- \* Opportunity cost problem
- \* Diminishing returns problem
- \* Cannibalization problem
- \* Positive externality
- \* Negative externality
- \* Principal/agent problem

That answer is incorrect.

Correct answer:

Negative externality

In this situation, a negative externality exists for Clay Industries and the development of the new coal refining system. A negative externality is some detrimental effect which is to result on stakeholders from the acceptance of a project. While often difficult to quantify, externalities are an important consideration in the accept/reject decision in capital projects. Externalities can be both positive and negative.

-----

Which of the following figures is not expressly incorporated into the Degree of Operating Leverage, as based on the "unit sales" calculation.

- \* Average sales price
- \* Total variable operating costs per unit

- \* Price
- \* Common shares outstanding
- \* Total fixed operating costs
- \* Sales in units

That answer is incorrect.

Correct answer:

Common shares outstanding

The Degree of Operating Leverage (DOL) measures the percentage change in EBIT that results from a given change in sales. The DOL can be calculated using several methods, including one that is based on unit sales. This version of the DOL equation is as follows:

$\{DOL = [(Sales\ in\ units(average\ sales\ price - variable\ cost\ per\ unit) / (sales\ in\ units(average\ sales\ price - variable\ cost\ per\ unit) - total\ fixed\ operating\ costs)]\}$ . Of the choices listed, only the number of common shares outstanding is not incorporated into the DTL equation. In fact, the number of common shares outstanding is not factored into any of the equations used to calculate DOL.

-----

The additional risk associated with a firm's earnings when it uses debt capital is known as

- \* business risk.
- \* systematic risk.
- \* capital market risk.
- \* financial risk.

That answer is incorrect.

Correct answer:

financial risk.

Financial risk is the additional risk associated with a firm's earnings when it uses debt capital.

-----

Which of the following statements is most incorrect?

- \* All of these answers are correct.
- \* If the after-tax cost of equity financing exceeds the after-tax cost of debt financing, firms are always able to reduce their WACC by increasing the amount of debt in their capital structure.
- \* The optimal capital structure minimizes the WACC.
- \* None of these answers are correct.
- \* Increasing the amount of debt in a firm's capital structure is likely to increase the cost of both debt and equity financing.

That answer is incorrect.

Correct answer:

If the after-tax cost of equity financing exceeds the after-tax cost of debt financing, firms are always able to reduce their WACC by increasing the amount of debt in their capital structure.

This statement is not always true.

-----  
Returns on the market and Company Y's stock during the last 3 years are shown below:

Year	Market	Company Y
1995	-24%	-22%
1996	10	13
1997	22	36

The risk-free rate is 5 percent, and the required return on the market is 11 percent. You are considering a low-risk project whose market beta is 0.5 less than the company's overall corporate beta. You finance only with equity, all of which comes from retained earnings. The project has a cost of \$500 million, and it is expected to provide cash flows of \$100 million per year at the end of Years 1 through 5 and then \$50 million per year at the end of Years 6 through 10. What is the project's NPV (in millions of dollars)?

- \* \$7.10
- \* \$12.10
- \* \$9.26
- \* \$15.75
- \* \$10.42

That answer is incorrect.  
Correct answer:  
\$10.42

Step 1 Run a regression to find the corporate beta. Market returns are the X-input values, while Y's returns are the Y-input values. Beta is 1.2102.

Step 2 Find the project's estimated beta by subtracting 0.5 from the corporate beta. The project beta is thus  $1.2102 - 0.5 = 0.7102$ .

Step 3 Find the company's cost of equity, which is its WACC because it uses no debt:  
 $k(s) = \text{WACC} = 5\% + (11\% - 5\%)0.7102 = 9.26\%$ .

Step 4 Now find the project's NPV (inputs are in millions):

$$\begin{aligned} \text{CF}(0) &= -500 \\ \text{CF}(1-5) &= 100 \\ \text{CF}(6-10) &= 50 \\ I &= 9.26\% \end{aligned}$$

Solve for NPV = \$10.42 million.

-----

The management of Clay Industries have adhered to the following capital structure: 50% debt, 45% common equity, and 5% perpetual preferred equity. The following information applies to the firm:

Before-tax cost of debt = 7.5%  
Combined state/federal tax rate = 35%  
Expected return on the market = 14.5%

Annual risk-free rate of return = 5.25%  
Historical Beta coefficient of Clay Industries Common Stock = 1.15  
Annual preferred dividend = \$1.35  
Preferred stock net offering price = \$17.70  
Expected annual common dividend = \$0.45  
Common stock price = \$30.90  
Expected growth rate = 11.75%  
Subjective risk premium = 3.3%

Given this information, and using the Bond-Yield-plus-Risk-Premium approach to calculate the component cost of common equity, what is the Weighted Average Cost of Capital for Clay Industries?

- \* 15.03%
- \* 9.97%
- \* 8.762%
- \* 7.70%
- \* 7.30%
- \* The WACC for Clay Industries cannot be calculated from the information.

That answer is incorrect.

Correct answer:

7.70%

The calculation of the Weighted Average Cost of Capital is as follows:  $\{\text{fraction of debt} * [\text{yield to maturity on outstanding long-term debt}][1 - \text{combined state/federal income tax rate}]\} + \{\text{fraction of preferred stock} * [\text{annual dividend/net offering price}]\} + \{\text{fraction of common stock} * \text{cost of equity}\}$ . The cost of common equity can be calculated using three methods, the Capital Asset Pricing Model (CAPM), the Dividend-Yield-plus-Growth-Rate (or Discounted Cash Flow) approach, and the Bond-Yield-plus-Risk-Premium approach. In this example, you are asked to calculate the cost of common equity using the Bond-Yield-plus-Risk-Premium approach. To calculate the cost of equity using this approach, take the yield to maturity on the firm's outstanding debt (7.5%) and add a subjective risk premium (3.3%), which gives a cost of common equity of 10.8%. The after-tax cost of debt can be found by multiplying the yield to maturity on the firm's outstanding long-term debt (7.5%) by (1-tax rate). Using this method, the after-tax cost of debt is found as 4.875%. The calculation of the cost of perpetual preferred stock is relatively straightforward, simply divide the annual preferred dividend by the net offering price. Using this method, the cost of preferred stock is found as 7.627%. Incorporating these figures into the WACC equation gives the answer of 7.679%.

-----  
Which of the following statements is most correct?

- \* All of these statements are false.
- \* A break point is based on the dollar value used of a specific type of capital, and occurs at the point where the cost of that capital type increases. Thus, if a firm has \$100,000 in earnings, and stockholders want \$50,000 of those earnings paid as dividends, then retained earnings will have two break points.
- \* A firm facing a steep demand curve (that is, high flotation costs) for new equity would likely also face, at some point, a steeply upward sloping WACC curve.
- \* All of these statements are correct.
- \* One purpose of calculating the WACC (Weighted Average Cost of Capital) is to have a singular cost of capital measure that can be applied to evaluate all of the firm's projects, including those of greater than and lesser than average risks.

That answer is incorrect.

Correct answer:

A firm facing a steep demand curve (that is, high flotation costs) for new equity would likely also face, at some point, a steeply upward sloping WACC curve.

Because of high flotation costs, dollars raised by selling new stock must work harder than dollars raised by retaining earnings. Steep demand would result in a steeply upward sloping WACC curve. Note, however, that for most firms, new equity issues are rare.

-----

Scott Corporation's new project calls for an investment of \$10,000. It has an estimated life of 10 years. The IRR has been calculated to be 15 percent. If cash flows are evenly distributed and the tax rate is 40 percent, what is the annual before-tax cash flow each year? (Assume depreciation is a negligible amount.)

- \* \$1,500
- \* \$3,321
- \* \$5,019
- \* \$1,993
- \* \$4,983

That answer is incorrect.

Correct answer:

\$3,321

X = after-tax cash flow.

Y = before-tax cash flow.

$X = Y(1 - T)$ .

$$\$10,000 = X(PVIFA(15\%, 10))$$

$$\$10,000 = X(5.0188)$$

$$X = \$1,992.51.$$

$$\$1,992.51 = Y(1 - 0.40)$$

$$Y = \$3,320.85 = \$3,321.$$

-----

Suppose the firm's WACC is stated in nominal terms, but the project's expected cash flows are expressed in real dollars. In this situation, other things held constant, the calculated NPV would

- \* possibly have a bias, but it could be upward or downward.
- \* more information is needed; otherwise, we can make no reasonable statement.
- \* be biased upward.
- \* be biased downward.
- \* be correct.

That answer is incorrect.

Correct answer:

be biased downward.

Given the fact that there is inflation, a cost of capital stated in nominal terms would understate the calculated NPV. If inflation is expected, but this expectation is not built into the forecasted cash flows, then the calculated NPV will be downward biased.

-----

Which of the following types of dividends, are never paid out in the form of cash?

- \* All of these are paid in the form of cash.
- \* Stock dividends.
- \* Regular dividends.
- \* Extra dividends.
- \* Liquidating dividends.

That answer is incorrect.

Correct answer:

Stock dividends.

Stock dividends are dividends paid in the form of additional shares of stock rather than in cash. The total number of shares is increased, so earnings, dividends, and price per share all decline. Stock dividends that are used on a regular basis will keep the stock price more or less constrained, that is, within the optimal trading range.

-----

The post-audit is used to

- \* eliminate potentially profitable but risky projects.
- \* all of these answers are correct.
- \* review cash flow forecasts.
- \* stimulate management to improve operations and bring results into line with forecasts.
- \* none of these answers are correct.

That answer is incorrect.

Correct answer:

stimulate management to improve operations and bring results into line with forecasts.

The two main purposes of the post-audit are to improve forecasts and improve operations. Management is putting their reputations on the line when forecasting an investment, and they will strive to improve operations to bring results into line with forecasts.

-----

Which of the following is most correct?

- \* Conflicts between NPV and IRR rules arise in choosing between two mutually exclusive projects (that each have normal cash flows) when the cost of capital exceeds the crossover point (that is, the point at which the NPV profiles cross).



- \* None of the statements are correct.
- \* The discounted payback method overcomes the problems that the payback method has with cash flows occurring after the payback period.
- \* The NPV and IRR rules will always lead to the same decision in choosing between mutually exclusive projects, unless one or both of the projects are "non-normal" in the sense of having only one change of sign in the cash flow stream.
- \* The Modified Internal Rate of Return (MIRR) compounds cash outflows at the cost of capital.

That answer is incorrect.

Correct answer:

None of the statements are correct.

IRR can lead to conflicting decisions with NPV even with normal cash flows if the projects are mutually exclusive. Cash outflows are discounted at the cost of capital with the MIRR method, while cash inflows are compounded at the cost of capital. Conflicts between NPV and IRR arise when the cost of capital is below the crossover point. The discounted payback method does correct the problem of ignoring the time value of money, but it still does not account for cash flows beyond the payback period.

-----

Quick Launch Rocket Company, a satellite launching firm, expects its sales to increase by 50 percent in the coming year as a result of NASA's recent problems with the space shuttle. The firm's current EPS is \$3.25. Its degree of operating leverage is 1.6, while its degree of financial leverage is 2.1. What is the firm's projected EPS for the coming year using the DTL approach?

- \* \$3.25
- \* \$5.46
- \* \$19.63
- \* \$10.92
- \* \$8.71

That answer is incorrect.

Correct answer:

\$8.71

$$\begin{aligned} \text{EPS}(1) &= \text{EPS}(0) + \text{EPS}(0) [\text{DTL} \times (\text{percent change in sales})] \\ &= \$3.25 [1 + (1.6)(2.1)(0.5)] = \$3.25 [2.68] \end{aligned}$$

$$\text{EPS}(1) = \$8.71.$$

-----

Calculate the cost of debt for the following firm:

Borrowing Rate 10%  
 Marginal Tax Rate 40%  
 Project IRR 12.5%  
 Owner's Equity 15%

- \* 1.5%
- \* 6%
- \* 60%

- \* 27.5%
- \* 10%

That answer is incorrect.

Correct answer:

6%

The cost of debt is simply the rate of borrowing less the tax savings. Due to the fact that interest expense is tax deductible, the cost of debt in this case is  $10\%(1 - .4) = 10\%(.6) = 6\%$ .

-----

Firms A and B have the same fixed costs in producing widgets. However, firm A charges 15% more than firm B for a widget while its variable costs per widget are 12% lower than those of B. If firm A sells a widget for 35% above its variable costs, the break-even point for B is \_\_\_\_\_ times higher than that for A.

- \* 2.0
- \* 9.2
- \* 3.3
- \* 2.5

That answer is incorrect.

Correct answer:

9.2

The break-even quantity, Q, is given by  $Q = FC/(P - V)$ , where FC = total fixed costs, P = average sale price per unit and V = average variable cost per unit.

You're given that  $FCA = FCB$ ,  $PA = 1.35VA$ ,  $PA = 1.15PB$  and  $VA = 0.88VB$ . Therefore,  $PB = (1.35/1.15)VA = 1.174VA$  and  $VB = (1/0.88)VA = 1.136VA$ .

This gives  $QA/QB = FC(PA-VA)/FC(PB-VB) = (PB - VB)/(PA - VA) = (1.174 - 1.136)/(1.35 - 1) = 0.109$ . Thus, the break-even point for B is  $(1/0.109) = 9.21$  times that for A.

-----

Assume you are the director of capital budgeting for an all-equity firm. The firm's current cost of equity is 16 percent; the risk-free rate is 10 percent; and the market risk premium is 5 percent. You are considering a new project that has 50 percent more beta risk than your firm's assets currently have, i.e., its beta is 50 percent larger than the firm's existing beta. The expected return (IRR) on the new project is 18 percent. Should the project be accepted if beta risk is the appropriate risk measure?

- \* Yes; its IRR is greater than the firm's cost of capital.
- \* No; a 50 percent increase in beta risk gives a risk-adjusted required return of 24 percent.
- \* No; the project's risk-adjusted required return is 1 percentage point above its IRR.
- \* Yes; the project's risk-adjusted required return is less than its IRR.
- \* No; the project's risk-adjusted required return is 2 percentage points above its IRR.

That answer is incorrect.

Correct answer:

No; the project's risk-adjusted required return is 1 percentage point above its IRR.

Calculate the beta of the firm, and use to calculate project beta:

$$k(s) = 0.16 = 0.10 + (0.05)b. \quad b = 1.2.$$

$b(\text{Project}) = b(\text{Firm})1.5$   $b(\text{Project})$  is 50% greater than current  $b(\text{Firm})$

$$b(\text{Project}) = (1.2)1.5 = 1.8.$$

Calculate required return on project,  $k(\text{Project})$ , and compare to IRR.

$$\text{Project: } k(\text{Project}) = 0.10 + (0.05)1.8 = 0.19 = 19\%. \quad \text{IRR} = 0.18 = 18\%.$$

Since the required return is one percentage point greater than the expected IRR, the firm should not accept the new project.

-----

Ace Consulting, a multinational corporate finance consulting firm, is analyzing the profitability of a new line of superconductors designed by Clay Industries, a large industrial firm. In their analysis, Ace Consulting has developed a detailed statistical model that generates random values for key variables, and these random numbers are incorporated into the analysis. Using this proprietary statistical software, Ace Consulting is allowed to formulate a computer-based model of the superconductor's expected cash flows and NPV, given any randomly selected value for seven essential variables. Which of the following choices best describes this technique for measuring stand-alone risk?

- \* Relational computation analysis
- \* Monte Carlo simulation
- \* Sensitivity analysis
- \* Scenario analysis
- \* Regression analysis
- \* Marco Polo simulation

That answer is incorrect.

Correct answer:

Monte Carlo simulation

In this example, Ace Consulting has developed a statistical model which generates random values for seven key variables. Using this information, Ace can provide Clay Industries with an expected range of NPV and IRR for any assumed variable values. This process is referred to as Monte Carlo simulation, and is so named because the first Monte Carlo models were incorporated into the mathematical analysis of Casino gambling.

-----

Cepeda Corporation requires a computer system for the next ten years, and is in the process of choosing among two mutually exclusive alternatives.

System A costs \$50,000 today, and will produce positive net cash flows of \$12,000 a year for the next ten years ( $t = 1$  through  $t = 10$ ). System B costs \$30,000 today and will produce positive net cash flows of \$11,000 a year for the next five years. After five years, System B can be replaced under the same terms.

The company's cost of capital is 10 percent. What is the equivalent annual annuity (EAA) of the best system?

- \* \$6,261.18
- \* \$3,862.73
- \* \$5,002.39
- \* \$3,086.07
- \* \$2,373.48

That answer is incorrect.

Correct answer:

\$3,862.73

First find the NPV's of each system over its initial life.

System A:  $CF(0) = -50,000$ ;  $CF(1-10) = 12,000$ ;  $I = 10$ ; solve for NPV = \$23,734.81.

System B:  $CF(0) = -30,000$ ;  $CF(1-5) = 11,000$ ;  $I = 10$ , solve for NPV = \$11,698.65.

Second, find the value of the EAA of each system.

System A:  $N = 10$ ;  $I = 10$ ;  $PV = -23,734.81$ ;  $FV = 0$ ; solve for PMT = EAA = \$3,862.73.

System B:  $N = 5$ ;  $I = 10$ ;  $PV = -11,698.65$ ;  $FV = 0$ ; solve for PMT = EAA = \$3,086.07.

Given System A has a higher EAA, it is the better of the two systems.

-----

Which of the following methods for examining stand-alone risk is characterized by creating a situation in which the NPV is measured after one input variable is changed while the others are held constant?

Choose the best answer

- \* Sensitivity Analysis
- \* Monte Carlo Simulation
- \* Regression of the Poisson Distribution
- \* Scenario Analysis
- \* Probability Analysis

That answer is correct!

Sensitivity Analysis is a method of measuring stand-alone risk. In Sensitivity Analysis, one input variable is changed while every other input variable is held constant and the change in the project's NPV is examined. The first step in Sensitivity Analysis is similar to the first step in Scenario Analysis; specifically, the calculation of a "base-case" NPV which uses the expected values for each input variable. The next step in Sensitivity Analysis involves asking questions about changes in input variables. An example would include: "what if total fixed costs rise 10%?" or "what if unit sales fall 5%?" In conducting a Sensitivity Analysis, what is primarily being examined is the sensitivity of the project's NPV to fluctuations in each variable, i.e. which variables have the greatest impact on NPV.

-----

Rollins Corporation is constructing its MCC schedule. Its target capital structure is 20 percent debt, 20 percent preferred stock, and 60 percent common equity. Its bonds have a 12 percent coupon, paid semiannually, a current maturity of 20 years, and sell for \$1,000. The firm could sell, at par, \$100 preferred stock, which pays a 12 percent annual dividend, but flotation costs of 5 percent would be incurred. Rollins' beta is 1.2, the risk-free rate is 10 percent, and the market risk premium is 5 percent. Rollins is a constant growth firm, which just paid a dividend of \$2.00, sells for \$27.00 per share, and has a growth rate of 8 percent.

The firm's policy is to use a risk premium of 4 percentage points when using the bond-yield-plus-risk-premium method to find  $k(s)$ . The firm's net income is expected to be \$1 million, and its dividend payout ratio is 40 percent. Flotation costs on new common stock total 10 percent, and the firm's marginal tax rate is 40 percent.

What is Rollins' retained earnings break point?

- \* \$800,000
- \* \$1,000,000
- \* \$1,200,000
- \* \$1,400,000
- \* \$600,000

That answer is incorrect.

Correct answer:

\$1,000,000

Retained earnings =  $0.6(\$1,000,000) = \$600,000$ .

BP(RE) =  $\$600,000/0.6 = \$1,000,000$ .

-----

A firm's dividend growth rate is 3.2% when the dividend payout ratio equals 37%. It is expected to pay a dividend of \$2.2 next year. If the cost of external equity for the firm equals 19.2% and the firm's stock is currently priced at \$14.1, the flotation cost of equity equals \_\_\_\_\_.

- \* 1.78%
- \* 0.89%
- \* 2.50%
- \* 1.91%

That answer is incorrect.

Correct answer:

2.50%

IF  $F$  is the percentage flotation cost and  $P$  is the amount of new equity raised per new share, then  $K_e = D_1/[P(1-F)] + g$ , where  $K_e$  is the cost of external equity. Here,  $g = 3.2\%$ ,  $D_1 = \$2.2$ ,  $P = \$14.1$  and  $K_e = 19.2\%$ . Therefore,  $19.2\% = 2.2/(14.1*(1-F)) + 3.2\%$ . Solving for  $F$  gives  $F = 2.5\%$ .

-----

The management of Clay Industries have adhered to the following capital structure: 50% debt, 35%

common equity, and 15% perpetual preferred equity. The following information applies to the firm:

Before-tax cost of debt, i.e. yield to maturity of the outstanding senior long-term debt = 9.5%

Combined State/Federal tax rate = 35%

Cost of common equity = 14.45%

Annual preferred dividend = \$2.75

Preferred stock net offering price = \$28.50

Given this information, what is the Weighted Average Cost of Capital for Clay Industries?

- \* 9.60%
- \* 10.45%
- \* The WACC for Clay Industries cannot be calculated from the information given.
- \* 11.27%
- \* 6.52%
- \* 8.67%

That answer is correct!

The calculation of the Weighted Average Cost of Capital is as follows:  $\{\text{fraction of debt} * [\text{yield to maturity of outstanding long-term debt}][1 - \text{combined state/federal income tax rate}]\} + \{\text{fraction of preferred stock} * [\text{annual dividend}/\text{net offering price}]\} + \{\text{fraction of common stock} * \text{cost of equity}\}$ . The cost of common equity can be calculated using three methods, the Capital Asset Pricing Model (CAPM), the Dividend-Yield-plus-Growth-Rate (or Discounted Cash Flow) approach, and the Bond-Yield-plus-Risk-Premium approach. In this example, the cost of equity is given, so none of the three approaches is necessary. However, the cost of debt and preferred stock must be calculated. The cost of debt is found by multiplying the before tax cost of debt (9.5%) by (1-tax rate). Incorporating the given figures into this equation will yield a cost of debt at 6.175%. Determining the cost of perpetual preferred stock is relatively straightforward, simply divide the annual preferred dividend (\$2.75) by the net price of preferred stock (\$28.50), which yields a cost of preferred stock of 9.65%. These figures can now be incorporated into the WACC equation, which is provided below:  $\{[50\% \text{ debt} * 9.5\% * (1 - 35\%)] + [15\% * (\$2.75/\$28.50)] + [35\% * 14.45\%]\} = 9.60\%$

-----

Which of the following is not expressly incorporated into the Degree of Total Leverage (DTL) calculation?

- \* None of these answers
- \* Discount rate
- \* Interest expense
- \* Fixed costs
- \* Sales
- \* Variable costs

That answer is incorrect.

Correct answer:

Discount rate

The Degree of Total Leverage (DTL) calculation measures the percentage change in EPS from a given percentage change in sales. The equation used to produce DTL is as follows:  $\{\text{DTL} = [(\text{Sales} - \text{Variable Costs}) / (\text{Sales} - \text{Variable Costs} - \text{Fixed Costs} - \text{Interest Expense})]\}$ . As you can see, the DTL calculation does not involve the use of an explicit discount rate.

-----  
Company D has a 50 percent debt ratio, whereas Company E has no debt financing. The two companies have the same level of sales, and the same degree of operating leverage. Which of the following statements is most correct?

- \* None of these answers are correct.
- \* If sales increase 10 percent for both companies, then Company D will have a larger percentage increase in its operating income (EBIT).
- \* All of these answers are correct.
- \* If EBIT increases 10 percent for both companies, then Company D's net income will rise by more than 10 percent, while Company E's net income will rise by less than 10 percent.
- \* If sales increase 10 percent for both companies, then Company D will have a larger percentage increase in its net income.

That answer is incorrect.

Correct answer:

If sales increase 10 percent for both companies, then Company D will have a larger percentage increase in its net income.

After the sales increase, the percentage increase in EBIT will be the same for both companies. Company E's net income will rise by exactly 10%.

-----  
Which of the following statements is most correct?

- \* The optimal capital structure is the one that maximizes EBIT, and this always calls for a debt ratio, which is lower than the one that maximizes expected EPS.
- \* When financial leverage is used, the graphical probability distribution of net income would tend to be more peaked than a distribution where no leverage is present, other things held constant.
- \* From an operational standpoint the goal of maintaining financial flexibility translates into maintaining adequate reserve borrowing capacity.
- \* While business risk varies from one industry to another and can change over time, it affects all firms equally within a particular industry.
- \* All of these statements are false.

That answer is incorrect.

Correct answer:

From an operational standpoint the goal of maintaining financial flexibility translates into maintaining adequate reserve borrowing capacity.

Even in normal times, a firm should maintain a reserve borrowing capacity, which is the ability to borrow money at a reasonable cost when good investment opportunities arise.

-----  
A firm is considering the purchase of an asset whose risk is greater than the current risk of the firm, based on any method for assessing risk. In evaluating this asset, the decision-maker should

- \* Increase the NPV of the asset to reflect the greater risk.
- \* Ignore the risk differential if the asset to be accepted would comprise only a small fraction of the total assets of the firm.
- \* Reject the asset, since its acceptance would increase the risk of the firm.
- \* Increase the IRR of the asset to reflect the greater risk.
- \* Increase the cost of capital used to evaluate the project to reflect the higher risk of the project.

That answer is incorrect.

Correct answer:

Increase the cost of capital used to evaluate the project to reflect the higher risk of the project.

An increase in a project's beta will cause its stock price to decrease unless the increased beta were offset by a higher expected rate of return. Therefore, high-risk investments require higher rates of return, whereas low-risk investments require lower rates of return.

-----

Lascheid Enterprises is an all-equity firm with 175,000 shares outstanding. The company's stock price is currently \$80 a share. The company's EBIT is \$2,000,000 and is expected to remain constant over time. The company pays out all of its earnings each year--so its earnings per share equals its dividends per share. The firm's tax rate is 30 percent.

The company is considering issuing \$800,000 worth of bonds and using the proceeds for a stock repurchase. If issued the bonds would have an estimated yield to maturity of 8 percent. The risk-free rate is 5 percent and the market risk premium is also 5 percent. The company's beta is currently 1.0, but its investment banker's estimate that the company's beta would rise to 1.2 if they proceeded with the recapitalization. What would be the company's stock price following the repurchase transaction.

- \* \$102.63
- \* \$106.67
- \* \$77.14
- \* \$74.67
- \* \$70.40

That answer is incorrect.

Correct answer:

\$74.67

The bonds used in the repurchase will create a new interest expense for the company. This will change net income. Dividends per share will change because net income changes and the number of shares outstanding changes.

New interest expense:  $\$800,000 \times 8\% = \$64,000$ .

New net income:  $(\$2,000,000 - \$64,000)(1 - 0.3) = \$1,355,200$ .

Shares repurchased:  $\$800,000/80 = 10,000$  shares.

New shares outstanding:  $175,000 - 10,000 = 165,000$  shares.

New dividends per share:  $\$1,355,200/165,000 = \$8.21$ .

We must also calculate a new cost of equity:  $5\% + (5\%)1.2 = 11\%$ .

New stock price:  $\$8.21/11\% = \$74.67$ .

-----



Driver Corporation faces an IOS schedule calling for a capital budget of \$60 million. Its optimal capital structure is 60 percent equity and 40 percent debt. Its earnings before interest and taxes (EBIT) were \$98 million for the year. The firm has \$200 million in assets, pays an average of 10 percent on all its debt, and faces a marginal tax rate of 35 percent. If the firm maintains a residual dividend policy and will keep its optimal capital structure intact, what will be the amount of the dividends it pays out after financing its capital budget?

- \* \$30.0 million
- \* \$59.4 million
- \* \$22.5 million
- \* \$60.0 million
- \* \$0

That answer is incorrect.

Correct answer:

\$22.5 million

Calculate interest cost:

Total assets = \$200M; 40% debt x \$200M = \$80 million in debt.

Interest cost = \$80M x 0.10 = \$8.0 million.

Calculate net income (in millions):

EBIT	\$98.0
less: Interest	- 8.0
EBT	\$90.0
less: Taxes (35%)	31.5
Net income	\$58.5

Calculate portion of projects financed with retained earnings:

IOS contains \$60 million in positive NPV projects.

Retained earnings portion: \$60M x 0.60 = \$36.0 million

Debt portion: \$60M x 0.40 = \$24.0 million

Calculate residual available for dividends:

\$58.5M - \$36.0M = \$22.5 million in dividends.

-----

Texas Products Inc. has a division, which makes burlap bags for the citrus industry. The unit has fixed costs of \$10,000 per month, and it expects to sell 42,000 bags per month. If the variable cost per bag is \$2.00, what price must the division charge in order to break even?

- \* \$2.47
- \* \$3.15
- \* \$2.24
- \* \$2.00
- \* \$2.82

That answer is incorrect.

Correct answer:

\$2.24

Total costs =  $\$10,000 + \$2(42,000) = \$94,000$ .  
Price =  $\$94,000/42,000 = \$2.24$ .

-----

Market risk in a revenue-producing project can best be adjusted for by

- \* Ignoring it.
- \* Adjusting the discount rate downward for increasing risk.
- \* Picking a risk factor equal to the average discount rate.
- \* Adjusting the discount rate upward for increasing risk.
- \* Reducing the NPV by 10 percent for risky projects.

That answer is incorrect.

Correct answer:

Adjusting the discount rate upward for increasing risk.

An increase in a project's beta will cause its stock price to decrease unless the increased beta were offset by a higher expected rate of return. Therefore, high-risk investments require higher rates of return, whereas low-risk investments require lower rates of return.

-----

Normal projects C and D are mutually exclusive. Project C has a higher net present value if the WACC is less than 12 percent, whereas Project D has a higher net present value if the WACC exceeds 12 percent. Which of the following statements is most correct?

- \* None of the answers are correct.
- \* Project C probably has a faster payback.
- \* Project D is probably larger in scale than Project C.
- \* Project D has a higher internal rate of return.
- \* All of the statements are correct.

That answer is incorrect.

Correct answer:

Project D has a higher internal rate of return.

In this situation, D has a flatter NPV profile and a higher IRR. Project acceptance depends on what is the correct discount rate. If the discount rate is less than 12%, accept C. If it is greater than 12%, accept D. Projects that return their cash flows early (faster payback) and have lower initial investments tend to have higher IRRs.

-----

Which of the following statements is correct?

\* If you are choosing between two projects which have the same life, and if their NPV profiles cross, then the smaller project will probably be the one with the steeper NPV profile.

- \* If the cost of capital is relatively high, this will favor larger, longer-term projects over smaller, shorter-term alternatives because it is good to earn high rates on larger amounts over longer periods.
- \* If the cost of capital is less than the crossover rate for two mutually exclusive projects' NPV profiles, a NPV/IRR conflict will not occur.
- \* Because discounted payback takes account of the cost of capital, a project's discounted payback is normally shorter than its regular payback.
- \* The NPV and IRR methods use the same basic equation, but in the NPV method the discount rate is specified and the equation is solved for NPV, while in the IRR method the NPV is set equal to zero and the discount rate is found.

That answer is incorrect.

Correct answer:

The NPV and IRR methods use the same basic equation, but in the NPV method the discount rate is specified and the equation is solved for NPV, while in the IRR method the NPV is set equal to zero and the discount rate is found.

This statement reflects exactly the difference between the NPV and IRR methods.

-----

When a mature firm raises the dividend, signaling theory implies that its stock price \_\_\_\_\_. When a growth firm cuts the dividend, signaling theory implies that its stock price \_\_\_\_\_.

- \* will fall; may rise or fall
- \* will rise; will fall
- \* will fall; will rise
- \* will rise; may rise or fall

That answer is incorrect.

Correct answer:

will rise; may rise or fall

The signaling theory is properly applicable only to mature firms which have had stable dividend policies. In its pure form, the theory regards dividend changes as signals of management's forecasts of future earnings. Such an assumption is not fully justifiable for young, growth firms, which may cut dividends simply to supply retained earnings capital for expansion projects, without any signaling about the firm's future earnings prospects. Indeed, many growth firms pay no dividends at all for quite some time without an adverse effect on their stock prices.

Hence, the increase in the dividend of a mature firm is taken as a signal by investors - under the signaling hypothesis - that the management's forecasts of future earnings are quite favorable, leading to a rise in the stock price. On the other hand, for a growth firm, such a signaling conclusion does not necessarily hold.

-----

Which of the following projects is likely to have multiple Modified Internal Rates of Return. Assume a 14.5% cost of capital.

Project A

Initial investment outlay: (\$1,000,000)

t1: \$0.00  
t2: \$0.00  
t3: \$0.00  
t4: \$0.00  
t5: \$0.00  
t6: \$10,000,000

Project B  
Initial investment outlay: (\$1,000,000)  
t1: \$500,000  
t2: \$500,000  
t3: \$500,000  
t4: \$0.01

Project C  
Initial investment outlay: (\$1,000,000)  
t1: \$800,000  
t2: (\$100,000)  
t3: \$550,000

Project D  
Initial investment outlay: (\$500,000)  
t1: \$400,000  
t2: (\$1,000)  
t3: \$230,000  
t4: (\$50,000)

- \* Project D
- \* More than one of these answers are correct
- \* None of these answers is correct
- \* Project A
- \* Project B
- \* Project C

That answer is incorrect.  
Correct answer:  
None of these answers is correct

Remember that the Modified Internal Rate of Return method will not produce multiple answers for non-normal projects. The fact that MIRR will not produce multiple answers for non-normal projects is one of the reasons that this method should be considered as superior to the traditional Internal Rate of Return method.

-----

Shelby Inc. is considering two projects which have the following cash flows:

Time	Project 1 Cash Flows	Project 2 Cash Flows
0	-\$2,000	-\$1,900
1	500	1,100
2	700	900
3	800	800
4	1,000	600

5      1,100      400

At what cost of capital would the two projects have the same net present value?

- \* 5.98%
- \* 5.85%
- \* 6.40%
- \* 6.70%
- \* 4.73%

That answer is incorrect.

Correct answer:

5.85%

Subtract Project 2 cash flows from Project 1 cash flows:

CF(0) = -100  
CF(1) = -600  
CF(2) = -200  
CF(3) = 0  
CF(4) = 400  
CF(5) = 700

Put these in the cash flow register and solve for the IRR = 5.85%.

-----

Which of the following factors directly influence capital structure decisions?

- I. Business risk
- II. Availability of various sources of capital under attractive terms
- III. Expropriation risk
- IV. The firm's tax position
- V. Management's subjective attitudes toward risk
- VI. Country risk

- \* II, III, IV, V
- \* I, II, III, IV, V, VI
- \* I, III, IV
- \* I, II, IV, V
- \* I, II, IV, VI

That answer is incorrect.

Correct answer:

I, II, IV, V

There are four primary factors which influence capital structure decisions: business risk, financial flexibility, the firm's tax position, and management's subjective attitudes toward risk. Business risk is defined as the riskiness of a firm if it uses no debt. Financial flexibility refers to the ability of a company to easily raise various sources of capital under favorable terms. "Expropriation risk," and "country risk," while legitimate forms of risk, are not directly applicable to the capital structure decision. Expropriation risk is defined as the risk that a firm's existing assets and facilities will be seized, or "expropriated" by a governmental, social, or military entity. This risk is frequently incorporated into discussions of international operations.

-----

Which of the following statements is correct?

- \* The bond-yield-plus-risk-premium approach to estimating the cost of equity is not always accurate but its advantages are that it is a standardized and objective model.
- \* Although some methods of estimating the cost of capital encounter severe difficulties, the CAPM (Capital Asset Pricing Model) is a simple and reliable model that provides great accuracy and consistency in estimating the cost of capital.
- \* Depreciation-generated funds are an additional source of capital and, in fact, represent the largest single source of funds for some firms.
- \* The DCF (Discounted Cash Flow) model is preferred over other models to estimate the cost of equity because of the ease with which a firm's growth rate is obtained.

That answer is incorrect.

Correct answer:

Depreciation-generated funds are an additional source of capital and, in fact, represent the largest single source of funds for some firms.

Since depreciation is a significant non-cash expense, it is added back to net income when calculating cash flow.

-----

The Global Advertising Company had net income after interest but before taxes of \$40,000 this year. The marginal tax rate is 40 percent, and the dividend payout ratio is 30 percent. The company can raise debt at a 12 percent interest rate. The last dividend paid by Global was \$0.90. Global's common stock is selling for \$8.59 per share, and its expected growth rate in earnings and dividends is 5 percent. If Global issues new common stock, the flotation cost incurred will be 10 percent. Global plans to finance all capital expenditures with 30 percent debt and 70 percent equity.

What is the cost of common equity raised by selling new stock?

- \* 10.33%
- \* 12.22%
- \* 16.00%
- \* 17.22%
- \* 9.66%

That answer is incorrect.

Correct answer:

17.22%

$k(e)$  (component cost of external equity) =  $\$.945/\$8.59 (1-.10) + 0.05 = 0.1722 = 17.22\%$ .

-----

Which of the following statements is most correct?

- \* If Congress cuts the capital gains rate, but leaves the personal tax rate unchanged, then this would provide an incentive for companies to increase their dividend payouts.
- \* If a firm follows a residual dividend policy, then a sudden increase in the number of profitable projects is likely to reduce the firm's dividend payout.
- \* None of these answers are correct.
- \* Despite its drawbacks, a residual dividend policy is an effective way to stabilize dividend payouts, which makes it easier for firms to attract a clientele which prefers high dividends.
- \* All of these answers are correct.

That answer is incorrect.

Correct answer:

If a firm follows a residual dividend policy, then a sudden increase in the number of profitable projects is likely to reduce the firm's dividend payout.

The residual dividend model is a model in which the dividend paid is set equal to the actual earnings minus the amount of retained earnings necessary to finance the firm's optimal capital budget. The residual dividend policy minimizes the costs to the company of raising outside funds, but it does not provide a stable cash flow to the investors and most investors prefer stable dividends.

-----

Which of the following statements is most correct?

- \* If a company undertakes a 3-for-1 stock split, then the number of shares outstanding should fall, and the stock price should rise.
- \* All of these answers are correct.
- \* None of these answers are correct.
- \* If a company wants to issue new shares of common stock and also wants to implement a dividend reinvestment plan, then it should implement a new-stock dividend reinvestment plan, rather than an open-market purchase plan.
- \* If a company wants to reduce its debt ratio, then it should repurchase some of its common stock.

That answer is incorrect.

Correct answer:

If a company wants to issue new shares of common stock and also wants to implement a dividend reinvestment plan, then it should implement a new-stock dividend reinvestment plan, rather than an open-market purchase plan.

The new stock type of dividend reinvestment plan invests the dividends in newly issued stock, hence these plans raise new capital for the firm.

-----

McCarver Inc. is considering the following mutually exclusive projects:

	Project A	Project B
Time	Cash Flow	Cash Flow
0	-\$5,000	-\$5,000
1	200	3,000

2	800	3,000
3	3,000	800
4	5,000	200

At what cost of capital will the net present value of the two projects be the same?

- \* 16.15%
- \* 17.72%
- \* 17.80%
- \* 15.68%
- \* 16.25%

That answer is correct!

Find the differences between the two projects' respective cash flows as follows:

(Project A CF - Project B CF).  
 $CF(0) = -5,000 - (-5,000) = 0$ .  
 $CF(1) = 200 - 3,000 = -2,800$ .  
 $CF(2) = -2,200$ .  
 $CF(3) = 2,200$ .  
 $CF(4) = 4,800$ .

Enter these CFs and find the IRR = 16.15% which is the crossover rate.

-----

Clay Industries, a large industrial firm, is evaluating the sales of its existing line of coiled machine tubing. In their analysis, the operating managers of Clay Industries have identified the following information related to the coiled machine tubing division and its product:

Annual fixed operating expenses of \$925,000  
 Average selling price of \$90  
 Average variable cost of \$44

Which of the following best describes the breakeven quantity for this product?

- \* 20,109 units
- \* The breakeven quantity cannot be determined from the information provided.
- \* None of these answers is correct.
- \* 20,468 units
- \* 10,278 units
- \* 21,023 units

That answer is correct!

To calculate the breakeven quantity for a product, use the following equation:  $\{\text{Fixed operating costs}/[\text{avg. sales price per unit} - \text{variable cost per unit}]\}$ . The determination of the breakeven quantity for this product is relatively straightforward, and does not involve any algebraic manipulation of the original equation. Incorporating the given information into the equation yields the following:  $\{\$925,000/[\$90 - \$44]\} = 20,109$  units.



-----  
From the information below, select the optimal capital structure for Minnow Entertainment Company.

- \* Debt = 80%; Equity = 20%; EPS = \$3.42; Stock price = \$30.40.
- \* Debt = 60%; Equity = 40%; EPS = \$3.18; Stock price = \$31.20.
- \* Debt = 70%; Equity = 30%; EPS = \$3.31; Stock price = \$30.00.
- \* Debt = 50%; Equity = 50%; EPS = \$3.05; Stock price = \$28.90.
- \* Debt = 40%; Equity = 60%; EPS = \$2.95; Stock price = \$26.50.

That answer is incorrect.

Correct answer:

Debt = 60%; Equity = 40%; EPS = \$3.18; Stock price = \$31.20.

Since the optimal capital structure is the one that maximizes the price of the firm's stock, and minimizes the firm's WACC, this would be the optimal capital structure.

-----  
Tapley Acquisition Inc. is considering the purchase of Target Company. The acquisition would require an initial investment of \$190,000, but Tapley's after-tax net cash flows would increase by \$30,000 per year and remain at this new level forever. Assume a cost of capital of 15 percent. Should Tapley buy Target?

- \* Yes, because the IRR < the cost of capital.
- \* Yes, because the NPV = \$10,000.
- \* No, because NPV < 0.
- \* No, because  $k > IRR$ .
- \* Yes, because the NPV = \$30,000.

That answer is incorrect.

Correct answer:

Yes, because the NPV = \$10,000.

$NPV = \$30,000/0.15 - \$190,000 = \$200,000 - \$190,000 = \$10,000.$

-----  
When Modigliani and Miller relaxed their assumption of zero taxes, they concluded which of the following?

- \* Firm's will wish to issue preferred stock.
- \* A firm's value is maximized only when it uses no debt.
- \* Business risk will become the main determinant of a firm's value.
- \* Dividend policy will dominate the investment decision.
- \* A firm's capital structure is irrelevant.
- \* A firm's value is maximized only when it uses 100% debt.

That answer is incorrect.

Correct answer:

A firm's value is maximized only when it uses 100% debt.

When M&M relaxed their "no-taxes" assumption, they concluded that a firm's value was maximized only when its capital structure is composed of 100% debt. This is due to the tax-deductibility of debt. Due to these tax-shelter benefits, companies who are financed by 100% debt pass the maximum amount of their operating income to investors, and this should increase the attractiveness of the firm as an investment. M&M would be criticized on this finding, particularly because the risk of bankruptcy was completely ignored. This criticism would give birth to the "Trade-off Theory of Leverage," which states that companies will balance the tax-shelter benefits of debt with the increased interest rates and risk of bankruptcy that are associated with increased debt levels..

-----

Which of the following statements is most correct?

- \* All of the answers above are correct.
- \* An increase in the personal tax rate is likely to increase the debt ratio of the average corporation.
- \* A reduction in the corporate tax rate is likely to increase the debt ratio of the average corporation.
- \* None of these answers are correct.
- \* If changes in the bankruptcy code make bankruptcy less costly to corporations, then this would likely reduce the debt ratio of the average corporation.

That answer is incorrect.

Correct answer:

None of these answers are correct.

A major reason for using debt is that interest is deductible, which lowers the effective cost of debt. Lowering the corporate tax rate reduces the tax advantages of debt leading firms to use less debt financing. If the personal tax rate were to increase, individuals would now find interest received on corporate debt less attractive, causing firms to utilize less debt financing. An increase in the costs of bankruptcy might lead firms to use less debt in order to reduce the probability of having to incur these higher costs.

-----

A stock has an expected dividend growth rate of 4.4%. The firm has just announced a dividend of \$1.9 per share, with an ex dividend date 3 days from now. Investors expect a rate of return of 9% from the stock and the stock is trading at \$31.84. Ignoring stock price uncertainty between now and the ex dividend date and expecting the same growth, the stock is:

- \* fairly priced.
- \* under-priced.
- \* insufficient information.
- \* overpriced.

That answer is incorrect.

Correct answer:

under-priced.

Ignoring stock price uncertainty between now and the ex dividend date, the stock would have a fair price of  $P_0$  on the ex dividend date, given by  $P_0 = D_1/(r-g) = 1.9 \cdot 1.044 / (9\% - 4.4\%) = \$43.12$ . Therefore, the current fair price of the stock is  $\$43.12 + \$1.9 = \$45.02$ , which is much greater than the actual trading

price of \$31.84. Thus, the stock is under-priced.

Note that the operative phrase in this example is "ignoring all uncertainty between now and the ex dividend date and expecting the same growth." If the market is expecting some negative information about the firm to be released some time in the near future (not necessarily before ex dividend date) or does not believe that the firm will continue to grow at or more than 4.4%, the actual trading price could be a fair price. Hence, you should never blindly apply the DDM.

-----

J. Ross and Sons Inc. has a target capital structure that calls for 40 percent debt, 10 percent preferred stock, and 50 percent common equity. The firm's current after-tax cost of debt is 6 percent, and it can sell as much debt as it wishes at this rate. The firm's preferred stock currently sells for \$90 a share and pays a dividend of \$10 per share; however, the firm will net only \$80 per share from the sale of new preferred stock. Ross expects to retain \$15,000 in earnings over the next year. Ross' common stock currently sells for \$40 per share, but the firm will net only \$34 per share from the sale of new common stock. The firm recently paid a dividend of \$2 per share on its common stock, and investors expect the dividend to grow indefinitely at a constant rate of 10 percent per year.

Where will a break in the MCC schedule occur?

- \* \$20,000
- \* \$10,000
- \* \$42,000
- \* There will be no breaks in the MCC schedule.
- \* \$30,000

That answer is incorrect.

Correct answer:

\$30,000

Break point(RE) =  $\$15,000 / .50 = \$30,000$ .

-----

A financial analyst with Mally, Feasance & Company is examining shares of Intelligent Semiconductor. Assume the following information:

Retention rate: 80%

EPS: \$3.98

Discount rate: 12.35%

Tax rate: 35%

Beta coefficient: 1.5

Expected return on the market: 12.5%

Using this information, what is the expected growth rate of Intelligent Semiconductor? Choose the best answer.

- \* 65.00%
- \* The answer cannot be determined from the information provided.
- \* 61.75%
- \* None of these answers is correct.

- \* 43.33%
- \* 9.88%

That answer is incorrect.

Correct answer:

The answer cannot be determined from the information provided.

In order to determine the dividend growth rate of Intelligent Semiconductor, the following equation should be used:

$$g = ROE(1 - \text{Dividend Payout Ratio})$$

While the Retention Rate of Dividends (which equals one minus the Dividend Payout Ratio) is provided, the ROE figure is not. Further, the ROE figure cannot be determined from this information provided. Therefore, the growth figure cannot be calculated.

Remember that in determining dividend growth using the formula outlined above, neither the tax rate nor the discount rate is incorporated into the equation. Furthermore, the Beta Coefficient and the expected return on the market are largely irrelevant in this example.

-----

The modified IRR (MIRR) is normally \_\_\_\_\_.

- \* all of these answers are correct
- \* none of these answers are correct
- \* greater than the regular IRR if  $IRR > k$
- \* equal to the regular IRR if  $IRR < k$
- \* less than the regular IRR if  $IRR > k$

That answer is incorrect.

Correct answer:

less than the regular IRR if  $IRR > k$

MIRR assumes that cash flows from all projects are reinvested at the cost of capital, while the regular IRR assumes that the cash flows from each project are reinvested at the project's own IRR. Therefore the IRR will be greater than the MIRR if the IRR is greater than the cost of capital.

-----

An increase in the dividend payout ratio \_\_\_\_\_ the retained earnings break-point.

- \* decreases
- \* increases or decreases, depending on the tax rate
- \* increases
- \* does not affect

That answer is correct!

As the dividend payout ratio is increased, the amount of earnings retained decreases, decreasing the

amount of new debt that can be issued without changing the capital structure. Hence, the retained earnings breakpoint will decrease.

-----

The management of Clay Industries have adhered to the following capital structure: 50% debt, 35% common equity, and 15% preferred equity. The following information applies to the firm:

Before-tax cost of debt = 9.5%  
Combined state/federal tax rate = 35%  
Expected return on the market = 14.5%  
Annual risk-free rate of return = 6.25%  
Historical Beta coefficient of Clay Industries Common Stock = 1.24  
Annual preferred dividend = \$1.55  
Preferred stock net offering price = \$24.50  
Expected annual common dividend = \$0.80  
Common stock price = \$30.90  
Expected growth rate = 9.75%  
Subjective risk premium = 3.3%

Given this information, and using the Bond-Yield-plus-Risk-Premium approach to calculate the component cost of common equity, what is the Weighted Average Cost of Capital for Clay Industries?

- \* 9.79%
- \* 8.36%
- \* 9.82%
- \* 6.93%
- \* 8.52%
- \* The WACC for Clay Industries cannot be calculated from the information.

That answer is incorrect.

Correct answer:

8.52%

The calculation of the Weighted Average Cost of Capital is as follows:  $\{\text{fraction of debt} * [\text{yield to maturity of outstanding long-term debt}][1 - \text{combined state/federal income tax rate}]\} + \{\text{fraction of preferred stock} * [\text{annual dividend}/\text{net offering price}]\} + \{\text{fraction of common stock} * \text{cost of equity}\}$ . The cost of common equity can be calculated using three methods, the Capital Asset Pricing Model (CAPM), the Dividend-Yield-plus-Growth-Rate (or Discounted Cash Flow) approach, and the Bond-Yield-plus-Risk-Premium approach. In this example, you are asked to calculate the cost of common equity using the Bond-Yield-plus-Risk-Premium approach. To calculate the cost of equity using this approach, take the yield to maturity on the firm's outstanding debt (9.5%) and add a subjective risk premium (3.3%), which gives a cost of common equity of 12.8%. The after-tax cost of debt can be found by multiplying the yield to maturity on the firm's outstanding long-term debt (9.5%) by (1-tax rate). Using this method, the after-tax cost of debt is found as 6.175%. The calculation of the cost of perpetual preferred stock is relatively straightforward, simply divide the annual preferred dividend by the net offering price. Using this method, the cost of preferred stock is found as 6.327%. Incorporating these figures into the WACC equation gives the answer of 8.516%.

-----

Consider the following information for Company ABC:

Current Price of Stock \$40.25  
Expected dividend in 1 Year \$1.10  
Growth rate 9.2%  
Beta 1.2  
Risk Free Rate 4.5%  
Expected Market Return 10%

Calculate this company's cost of retained earnings using the Discounted Cash Flow (DCF) method.

- \* 13.70%
- \* 11.93%
- \* 12.0%
- \* 9.20%
- \* 13.30%
- \* 11.04%

That answer is incorrect.

Correct answer:  
11.93%

The DCF method for estimating the cost of retained earnings states: Cost of Retained Earnings = (Dividend for period 1 / Current Price) + Growth Rate. In this case the estimated Cost of Retained Earnings =  $(1.1 / 40.25) + 9.2\% = 2.73 + 9.2 = 11.93\%$

-----

Project A has a higher IRR than project B. Both projects have normal cash flows. If the projects have the same cost of capital which is greater than the crossover rate,

- \* Project A has a higher NPV.
- \* Both projects have the same NPV.
- \* Project B has a higher NPV.
- \* Insufficient information.

That answer is correct!

The crossover rate is the discount rate at which the graphs of NPV versus discount rate for the two projects cross. Since the projects have normal cash flows, they will have a single crossover rate. Further, the project with the higher IRR has a "flatter" NPV profile. Therefore, if the cost of capital is larger than the crossover rate, the project with the flatter profile will have a larger NPV.

-----

Steadybeta currently operates 3 projects, resulting in a beta of 1.27. It is considering a risky expansion project whose cash flow analysis indicates a beta of 2.3. The project requires a capital commitment of \$4.8 million and has an NPV of \$2 million. The current risk-free rate is 5.6% and the market risk premium is 8.9%. Steadybeta's current market capitalization is \$17.2 million. If Steadybeta undertook the project, the required rate of return expected by its shareholders will be:

- \* 14.8%

- \* 13.9%
- \* 19.5%
- \* 16.2%

That answer is incorrect.

Correct answer:

19.5%

The firm can be considered a portfolio of 4 projects. The beta of a portfolio equals the weighted average of the betas of the individual components. The weight of a component equals the fraction of the market value it comprises. Since the project has an NPV of \$2 million, its market value equals \$6.8 million and the market value after the project is undertaken will be  $\$(17.2+6.8) = \$24$  million. Therefore, the beta of the firm after it undertakes the project equals  $17.2/24 \cdot 1.27 + 6.8/24 \cdot 2.3 = 1.56$ . The required rate of return then equals  $5.6\% + 1.56 \cdot 8.9\% = 19.5\%$ .

-----

Which of the following is the correct chronological order in dividend payment procedures?

- \* Declaration date, record date, ex dividend date, dividend payment date.
- \* Declaration date, dividend payment date, record date, ex dividend date.
- \* Declaration date, ex dividend date, record date, dividend payment date.
- \* Declaration date, ex dividend date, dividend payment date, record date.

That answer is incorrect.

Correct answer:

Declaration date, ex dividend date, record date, dividend payment date.

In the U.S., the ex dividend date, i.e. the date after which the stock does not carry with it the right to receive the declared dividend, is 4 business days before the record date. The record date is the last day for registering the ownership of the stock with the firm so that the dividend check is mailed to you and not someone else.

-----

Which of the following statements is most correct?

- \* All of these statements are correct.
- \* Stockholders pay no income tax on dividends reinvested in a dividend reinvestment plan.
- \* Investors receiving stock dividends must pay taxes on the new shares at the time the stock dividends are received.
- \* None of these statements are correct.
- \* "New-stock" dividend reinvestment plans are similar to stock dividends because they both increase the number of shares outstanding but don't change the total equity of a firm.

That answer is incorrect.

Correct answer:

None of these statements are correct.

Stock dividends are dividends paid in the form of additional shares of stock rather than in cash. The total

number of shares is increased, so earnings, dividends, and price per share all decline. In a dividend reinvestment plan, the stockholder must pay taxes on the dividend amount, even though stock and not cash has been received.

-----

The Residual Dividend Model is characterized as which of the following?

- \* Dividend paid = EBIT (1 - combined state/federal tax rate) - preferred dividends - interest expense
- \* Dividend paid = EBIT - Interest expense (1 - combined state/federal tax rate)
- \* Dividend paid = EBIT - capital expenditures
- \* None of these answers
- \* Dividend paid = EBITA - proposed capital expenditures - interest expense
- \* Dividend paid = EBIT - Retained earnings which are necessary to maintain the firm's optimal capital budget

That answer is incorrect.

Correct answer:

Dividend paid = EBIT - Retained earnings which are necessary to maintain the firm's optimal capital budget

The Residual Dividend Model is characterized by a firm paying out all earnings to common stockholders beyond that which is necessary to maintain the firm's optimal capital budget. Answer C correctly illustrates the calculation of the dividend paid according to the Residual Dividend Model.

-----

10 months ago, a firm had leased a downtown office for \$5,000 per month. The lease runs for the next 2.5 years. The current office space of similar size rents at \$4,000 per month. If the firm uses the space exclusively for a project over the next 6 months, the opportunity cost related to this equals \_\_\_\_\_.

- \* \$5,000 per month
- \* insufficient information
- \* \$4,000 per month
- \* zero

That answer is incorrect.

Correct answer:

\$4,000 per month

Opportunity cost is based on current market cost. It does not matter what the firm originally paid or agreed to pay for the property in question. Of course, since taxes are based on actual costs, the after-tax opportunity cost is definitely affected by historical contracts currently in force.

-----

A firm's capital structure consists of 35% debt with an after-tax cost of 5.2%. Common equity makes up 55% of the structure and the rest is made up of preferred equity. The preferred stock has a coupon of 7% and the required rate of return on the common stock is 13.7%. The firm's WACC is \_\_\_\_\_.



- \* 10.06%
- \* 15.61%
- \* none of these answers
- \* 13.24%
- \* 12.19%
- \* 11.95%
- \* 14.39%

That answer is incorrect.  
 Correct answer:  
 none of these answers

To get the WACC in this case, you need to have information on the cost of preferred stock. This is not necessarily equal to the coupon rate on the preferred equity. Rather, it is the discount rate that equates the present value of the perpetual payments on the preferred equity to its current price. Without the price information, you cannot get the cost of preferred equity and hence, WACC cannot be calculated.

-----

The date on which a firm's directors issue a statement declaring a dividend is known as \_\_\_\_\_.

- \* Ex-Dividend Date
- \* Declaration Date
- \* Payment Date
- \* Dividend Date
- \* Holder-of-Record Date

That answer is incorrect.  
 Correct answer:  
 Declaration Date

The date on which a statement is issued by a firm's directors declaring a dividend is known as the "Declaration Date."

-----

The Target Copy Company is contemplating the replacement of its old printing machine with a new model costing \$60,000. The old machine, which originally cost \$40,000, has 6 years of expected life remaining and a current book value of \$30,000 versus a current market value of \$24,000. Target's corporate tax rate is 40 percent. If Target sells the old machine at market value, what is the initial after-tax outlay for the new printing machine?

- \* -\$22,180
- \* -\$36,000
- \* -\$30,000
- \* -\$33,600
- \* -\$40,000

That answer is incorrect.

Correct answer:

-\$33,600

Initial outlay

Cost of new machine    -\$60,000  
Salvage value (old)        + 24,000

Tax effect of sale =  $\$6,000(0.4) = + 2,400$   
After-tax outlay =        -\$33,600

-----

A project requires an initial outlay of 650. It also needs capital spending of 700 at the end of year 1 and 900 at the end of year 2. It has no revenues for the first 2 years but receives 1,200 in year 3, 1,600 in year 4 and 2,300 in year 5. The project's cost of capital is 10%. The project's NPV equals \_\_\_\_\_.

- \* \$2,043
- \* \$1,938
- \* \$1,428
- \* \$1,393

That answer is incorrect.

Correct answer:

\$1,393

The discounted cash flow at the end of year N is obtained by dividing that year's cash flow by  $1.1^N$ , since the project's cost of capital is 10%. Using this, the discounted cash flows are:

-636, -744, +902, +1,093, +1,428.

The Present value of the cash flows is  $= -636 - 744 + 902 + 1,093 + 1,428 = \$2,043$ . The net present value of the project  $= \$2,043 - 650 = \$1,393$ .

-----

Which of the following was not an assumption used in the formulation of Modigliani and Miller's irrelevance theory of capital structure?

- \* All of these were assumptions used in the formulation of the Dividend Irrelevance Theory
- \* There are no taxes
- \* Operating income is not affected by the use of debt
- \* There are no transaction costs
- \* There is a universally accessible borrowing rate
- \* There is no asymmetric information problem between investors and management

That answer is correct!

In their landmark study published in the Journal of Finance, Franco Modigliani and Merton Miller theorized that under a set of restrictive assumptions, the capital structure established by companies is rendered completely irrelevant. All of the choices listed in this example were assumptions used in the formulation of the theory. In later studies, M&M would relax several of their assumptions, including the assumption of no taxes, and their findings would raise some important implications for the field of pure finance.

-----  
A project's break-even point is 1,235 units when the average sale price per unit is \$35 and the average variable cost equals \$17.5 per unit. The fixed costs of the project are closest to \_\_\_\_\_.

- \* \$613
- \* \$21,612.5
- \* none of these answers
- \* \$43,225

That answer is incorrect.

Correct answer:

\$21,612.5

The break-even sales revenue equal  $1,235 * \$35 = \$43,225$ . The total variable costs equal  $\$17.5 * 1,235 = \$21,612.5$ . The fixed costs are therefore equal to  $\$43,225 - \$21,612.5 = \$21,612.5$ .

-----  
Which of the following companies has the highest degree of financial leverage?  
Choose the best answer.

Firm A

EBIT: \$10,000,000

Interest Paid: \$750,000

Total Operating Expenses: \$25,000,000

Fixed Operating Expenses: \$19,750,000

Firm B

EBIT: \$8,970,000

Interest Paid: \$88,000

Total Operating Expenses: \$20,050,000

Fixed Operating Expenses: \$17,000,000

Firm C

EBIT: \$10,500,000

Interest Paid: \$1,050,000

Total Operating Expenses: \$50,000,000

Fixed Operating Expenses: \$35,000,000

Firm D

EBIT: \$10,000,000

Interest Paid: \$750,000

Total Operating Expenses: \$50,000,000

Fixed Operating Expenses: \$41,000,000

Firm E

EBIT: \$5,195,000

Interest Paid: \$400,000

Total Operating Expenses: \$35,000,000

Fixed Operating Expenses: \$9,875,000

- \* Firm A
- \* Firm E
- \* Firm B
- \* Firm C
- \* Firm D
- \* Firm A and D have identical DFL's

That answer is incorrect.  
 Correct answer:  
 Firm C

The Degree of Financial Leverage (DFL) measures the percentage change in EPS that results from a given percentage change in EBIT. Financial Leverage is the second component of total leverage, along with Operating Leverage. The equation used to calculate the Degree of Financial Leverage is as follows:  $\{DFL = [EBIT / (EBIT - Interest Paid)]\}$ .

In this example, Firm C has the highest DFL, with a figure of 1.11. While Firm A and D do have identical Degree of Financial Leverage calculations, the question asks which firm has the highest DFL, which is firm C. When calculating the DFL figure, remember that the answer can never be less than one, and can never be negative. In a situation where the company under examination has zero interest expense, the DFL would be equal to one; i.e. the EBIT is equal to the EBIT minus the interest expense. Another important note to remember is that in calculating the Degree of Financial Leverage, dividend payments to preferred stockholders should be included in the interest expense figure.

Operating expenses are not factored into the DFL calculation, rather are used in the determination of Operating Leverage.

-----

A stock's P/E ratio is 10.4, with an expected return on equity of 14% and a dividend growth rate of 5.7%. The firm's dividend payout ratio equals \_\_\_\_\_.

- \* 24.19%
- \* 56.17%
- \* 86.32%
- \* 13.68%

That answer is incorrect.  
 Correct answer:  
 86.32%

$$Po/E1 = \text{dividend payout} / (k - g)$$

Therefore,  $10.4 = \text{dividend payout} / (0.14 - 0.057)$ , giving dividend payout = 86.32%.

-----

Kulwicki Corporation wants to determine the effect of an expansion of its sales on its operating income (EBIT). The firm's current degree of operating leverage is 2.5. It projects new unit sales to be 170,000, an increase of 45,000 over last year's level of 125,000 units. Last year's EBIT was \$60,000. Based on a

degree of operating leverage of 2.5, what is this year's expected EBIT with the increase in sales?

- \* \$175,000
- \* \$60,000
- \* \$114,000
- \* \$90,000
- \* \$100,000

That answer is incorrect.

Correct answer:

\$114,000

Set up the DOL equation, letting x be the unknown new EBIT:

Let x = New EBIT.

$DOL(Q) = \% \text{ change EBIT} / \% \text{ change Sales}$

$\% \text{ change in sales} = 45000/125000 = 36\%$

$2.5 = (x - \$60,000)/\$60,000 / .36$

$2.5(0.36) = ((x - \$60,000)/\$60,000)$

$0.90 = (x - \$60,000)/\$60,000$

$\$54,000 = x - \$60,000$

$x = \$114,000.$

New EBIT = \$114,000.

-----

Which of the following statements is most correct?

- \* All of these answers.
- \* All else equal, an increase in a company's stock price will increase the marginal cost of issuing new common equity.
- \* None of these answers.
- \* If a company's tax rate increases but the yield to maturity of its noncallable bonds remains the same, the company's marginal cost of debt capital used to calculate its weighted average cost of capital will fall.
- \* All else equal, an increase in a company's stock price will increase the marginal cost of retained earnings.

That answer is incorrect.

Correct answer:

If a company's tax rate increases but the yield to maturity of its noncallable bonds remains the same, the company's marginal cost of debt capital used to calculate its weighted average cost of capital will fall.

The debt cost used to calculate a firm's WACC is  $k(d)(1 - T)$ . If  $k(d)$  (interest rate on the firm's new debt) remains constant but  $T$  increases, then the term  $(1 - T)$  decreases and the value of the entire equation,  $k(d)(1 - T)$ , decreases.

-----

Which of the following figures are incorporated into the Degree of Operating Leverage equation as based on total dollar sales?

- I. Sales in dollars
- II. Total variable costs
- III. Average sales price
- IV. Total fixed operating costs
- V. Average variable cost per unit
- VI. Number of common shares outstanding
- VII. Sales in units
- VIII. Discount rate

\* I, II, IV, VIII

\* II, IV, VII

\* I, II, IV, VIII

\* III, V, VII

\* I, II, IV

\* I, II, IV, VI

That answer is incorrect.

Correct answer:

I, II, IV

The Degree of Operating Leverage (DOL) measures the percentage change in EBIT that results from a given percentage change in sales. Degree of Operating Leverage can be calculated using several methods, including equations based upon unit sales and dollar sales. The DOL equation based on dollar sales is illustrated as follows:

{DOL = [(sales in dollars - total variable costs) / (sales in dollars - total variable costs - total fixed operating costs)]. Of the answers provided, only I, II, and IV are incorporated into this equation.

-----

Taylor Technologies has a target capital structure, which is 40 percent debt and 60 percent equity. The equity will be financed with retained earnings. The company's bonds have a yield to maturity of 10 percent. The company's stock has a beta = 1.1. The risk-free rate is 6 percent, the market risk premium is 5 percent, and the tax rate is 30 percent. The company is considering a project with the following cash flows:

Time	Cash flow (\$)
0	-50,000
1	35,000
2	43,000
3	60,000
4	-40,000

What is the project's modified internal rate of return (MIRR)?

\* 6.76%

\* 16.14%

\* 20.52%

\* 10.78%

\* 9.26%

That answer is incorrect.

Correct answer:

20.52%

First, find the company's weighted average cost of capital:

We're given the before-tax cost of debt,  $k(d) = 10\%$ . We can find the cost of equity as follows:

$$K(s) = 0.06 + 0.05(1.1) = 0.115 \text{ or } 11.5\%.$$

Thus, the WACC is:

$$k = 0.4(0.10)(1 - 0.3) + 0.6(0.115) = 0.097 \text{ or } 9.7\%.$$

Second, the PV of all cash outflows can be calculated as follows:

$$\text{PV of CF(4): } N = 4, I = 9.7, \text{ PMT} = 0, \text{ FV} = 40,000 \text{ and solve for PV. Total PV(Costs)} = -\$50,000 - \$27,620.62 = -\$77,620.62.$$

Third, find the terminal value of the project at  $t = 4$ :

FV of CF(1) at  $t = 4$  is calculated as follows:  $N = 3, I = 9.7, \text{ PV} = -35,000, \text{ PMT} = 0$ , and solve for  $\text{FV} = \$46,204.89$ . Similarly, the FVs of CF(2) and CF(3) are found to be  $\$51,746.59$  and  $\$65,820$ , respectively. Summing these FVs gives a terminal value of  $\$46,204.89 + \$51,746.59 + \$65,820.00 = \$163,771.48$ .

Finally, the MIRR can be calculated as  $N = 4, \text{ PV} = -77,620.62, \text{ PMT} = 0, \text{ FV} = 163,771.48$ , and solve for  $I = \text{MIRR} = 20.52\%$ .

-----

True or false. Firms with higher proportions of fixed costs will have an EBIT figure that is more sensitive to changes in sales, all else equal. Additionally, companies that have low Degree of Financial Leverage figures will have more aggressive depreciation and amortization schedules.

- \* False, true
- \* The answer cannot completely be determined from the information provided.
- \* True, false
- \* True, true
- \* False, false

That answer is incorrect.

Correct answer:

The answer cannot completely be determined from the information provided.

A somewhat tricky question as the answer cannot be fully determined from the information provided. While it is true that firms whose cost structure is weighted heavily toward fixed costs, i.e. have high relative DOL figures, will be more sensitive to changes in sales, the second question cannot be answered from the information provided. The Degree of Financial Leverage is defined as the percentage change in EPS that results from a given percentage change in EBIT. For purposes of general discussion, and the Level 1 CFA exam, the DFL calculation does not have an explicit bearing on the depreciation and amortization schedules used by companies. Had the second question asked "...companies that have low Degree of Financial Leverage figures will have EPS figures which are LESS sensitive to changes in EBIT," then both answers would be true.

-----

Which of the following statements is correct?

- \* Market risk is important but does not have a direct effect on stock price because it only affects beta.

- \* Well diversified stockholders do not consider corporate risk when determining required rates of return.
- \* Undiversified stockholders, including the owners of small businesses, are more concerned about corporate risk than market risk.
- \* Empirical studies of the determinants of required rates of return (k) have found that only market risk affects stock prices.

That answer is incorrect.

Correct answer:

Undiversified stockholders, including the owners of small businesses, are more concerned about corporate risk than market risk.

Corporate risk is the project's risk to the corporation giving consideration to the fact that the project represents only one of the firm's portfolio of assets, hence that some of its risk effects on the firm's profits will be diversified away.

-----

Calculate the cost of debt for the following firm:

Borrowing Rate 9.5%  
 Marginal Tax Rate 34%  
 Credit Rating BB+  
 Owner's Equity 15%

- \* 1.5%
- \* 8.075%
- \* 1.43%
- \* 9.5%
- \* 6.27%

That answer is incorrect.

Correct answer:

6.27%

The cost of debt is simply the rate of borrowing less the tax savings. Due to the fact that interest expense is tax deductible, the cost of debt in this case is  $9.5\%(1 - .34) = 9.5\%(.66) = 6.27\%$ .

-----

Telleworth Industries, a multinational conglomerate, is financed according to the following capital structure based on market values:

45% debt  
 35% common stock  
 20% perpetual preferred stock

Additionally, consider the following information relating to Telleworth Industries:

Yield on outstanding debt: 7.75%  
 Tax rate: 35%  
 Annual preferred dividend: \$1.35



Preferred stock price: \$22.34  
Return on equity: 15%  
Dividend payout ratio: 30%  
Cost of common stock: 16.25%

Using this information, what is the Weighted Average Cost of Capital for Telleworth Industries? #AI 8.46%

- \* 9.16%
- \* 7.46%
- \* The answer cannot be calculated from the information provided.
- \* 7.16%
- \* 6.45%

That answer is correct!

In order to calculate the WACC, it is necessary to first calculate the component cost of debt, common equity, and preferred equity. Once the cost of these components is determined, they are imputed into the WACC equation, which is as follows:

{WACC = [(% weight of debt securities \* cost of debt) + (% weight of common stock \* cost of common stock) + (% weight of preferred stock \* cost of preferred stock)]}

To calculate the component cost of debt, use the following equation:

{After-tax cost of debt = [yield on outstanding debt securities \* (1 - tax rate)]}

Factoring in the given information into this equation would yield the following:

{After-tax cost of debt = [7.75% \* (1 - 0.35%)]} = 5.04%

To calculate the component cost of outstanding preferred stock, the following equation must be used:

{Cost of preferred stock = [annual dividend / preferred stock price]}

{Cost of preferred stock - = [\$1.35 / \$22.34]} = 6.04%.

The final component of the WACC calculation, the cost of common equity, has been provided as 16.25%.

Now that the after-tax cost of debt, preferred stock, and common stock have been determined, the WACC calculation can be found. The calculation of the WACC is as follows:

{[0.45 \* 5.04] + [0.35 \* 16.25] + [0.20 \* 6.04]} = 9.16%

-----

A firm's preferred equity has a face value of 100 and a 5.5% coupon. The equity is trading at \$87.29 per share. The firm is in the 40% tax bracket. Its cost of preferred stock equals \_\_\_\_\_.

- \* 2.52%
- \* 3.30%
- \* 6.30%
- \* 3.78%

That answer is incorrect.

Correct answer:  
6.30%

Preferred dividends are not tax-deductible. Hence, no tax adjustment is made while calculating the cost of preferred equity. The price of a perpetuity that pays C per year, at a discount rate of R, equals C/R. Hence,  $87.29 = 5.5/R$ , giving  $R = 6.3\%$ .

-----

The common stock of Anthony Steel has a beta of 1.20. The risk-free rate is 5 percent, and the market risk premium is 6 percent. This year's addition to retained earnings is \$3,000,000. The company's capital budget is \$4,000,000 and its target capital structure is 50 percent debt and 50 percent equity. What is the company's cost of equity financing?

- \* 12.4%
- \* 7.0%
- \* 11.0%
- \* 12.2%
- \* 7.2%

That answer is incorrect.  
Correct answer:  
12.2%

Anthony Steel will use retained earnings to fund the equity portion of its capital budget. We can see this because the retained earnings break point is  $\$3,000,000/0.5 = \$6,000,000$ , which is greater than the capital budget.

The cost of equity from the CAPM (Capital Asset Pricing Model) is:

$$k(s) = k(rf) + (k(m) - k(rf))b(i) = 5\% + (6\%)1.2 = 12.2\%.$$

-----

Assume that a firm has a degree of financial leverage of 1.25. If sales increase by 20 percent, the firm will experience a 60 percent increase in EPS, and it will have an EBIT of \$100,000. What will be the EBIT for this firm if sales do not increase?

- \* \$42,115
- \* \$84,375
- \* \$67,568
- \* \$100,000
- \* \$113,412

That answer is incorrect.  
Correct answer:  
\$67,568

$DTL = \% \text{ change EPS} / \% \text{ change Sales} = 60\% / 20\% = 3.0.$   
 $DOL = DTL / DFL = 3.0 / 1.25 = 2.40.$   
 $\text{Old EBIT} = \$100,000 / [1 + (0.20)(2.40)] = \$100,000 / 1.48 = \$67,568.$

Alternate solution:

Use DFL expression to calculate change in EBIT and previous EBIT:

$$\begin{aligned} \text{DFL} &= 1.25 = \frac{\% \text{change EPS}}{\% \text{change EBIT}} \\ &= 0.60 / [\text{change EBIT} / (\$100,000 - \text{change EBIT})] \\ &= [0.60(\$100,000) - 0.60(\text{change EBIT})] / \text{change EBIT} \\ 1.25 \text{ change EBIT} &= \$60,000 - 0.60(\text{change EBIT}) \\ 1.85 \text{ change EBIT} &= \$60,000 \\ \text{change EBIT} &= \$32,432. \\ \text{Old EBIT} &= \$100,000 - \$32,432 = \$67,568. \end{aligned}$$

-----

Returns on the market and Takeda Company's stock during the last 3 years are shown below:

Year	Market	Takeda
1995	-12%	-14%
1996	23	31
1997	16	10

The risk-free rate is 7 percent, and the required return on the market is 12 percent. Takeda is considering a project whose market beta was found by adding 0.2 to the company's overall corporate beta. Takeda finances only with equity, all of which comes from retained earnings. The project has a cost of \$100 million, and it is expected to provide cash flows of \$20 million per year at the end of Years 1 through 5 and then \$30 million per year at the end of Years 6 through 10. What is the project's NPV (in millions of dollars)?

- \* \$23.11
- \* \$22.55
- \* \$28.12
- \* \$20.89
- \* \$25.76

That answer is correct!

1. Run a regression to find the corporate beta. It is 1.1633.
2. Find the project's estimated beta by adding 0.2 to the corporate beta. The project beta is thus 1.3633.
3. Find the company's cost of equity, which is its WACC because it uses no debt:  
 $k(s) = \text{WACC} = 7\% + (12\% - 7\%)1.3633 = 13.8165\%$ .

4. Now find NPV (in millions):

$$\begin{aligned} \text{CF}(0) &= -100 \\ \text{CF}(1-5) &= 20 \\ \text{CF}(6-10) &= 30 \\ I &= 13.82 \end{aligned}$$

Solve for NPV = \$23.11 million.

-----

The Seattle Corporation has been presented with an investment opportunity which will yield end-of-year cash flows of \$30,000 per year in Years 1 through 4, \$35,000 per year in Years 5 through 9, and \$40,000 in Year 10. This investment will cost the firm \$150,000 today, and the firm's cost of capital is 10 percent. What is the NPV for this investment?

- \* \$51,138
- \* \$135,984
- \* \$18,023
- \* \$219,045
- \* \$92,146

That answer is correct!

$$\begin{aligned} \text{NPV} &= \$30,000(\text{PVIFA}(10\%,4)) + \$35,000(\text{PVIFA}(10\%,5))(\text{PVIF}(10\%,4)) \\ &\quad + \$40,000(\text{PVIF}(10\%,10)) - \$150,000 \\ &= \$30,000(3.1699) + \$35,000(3.7908)(0.6830) \\ &\quad + \$40,000(0.3855) - \$150,000 = \$51,136.07. \end{aligned}$$

-----

Which of the following statements is most correct?

- \* In general, a firm with low operating leverage has a small proportion of its total costs in the form of fixed costs.
- \* None of these statements are correct.
- \* A firm with high business risk is more likely to increase its use of financial leverage than a firm with low business risk, assuming all else equal.
- \* All of these statements are correct.
- \* An increase in the personal tax rate would not affect firms' capital structure decisions.

That answer is correct!

If a high percentage of a firm's total costs are fixed, the firm has high operating leverage.

-----

Which of the following statements is correct?

- \* Only if one attempts to calculate MIRR does one have to worry about multiple IRRs.
- \* The discounted payback is generally shorter than the regular payback.
- \* The NPV and IRR methods can lead to conflicting accept/reject decisions only if (1) mutually exclusive projects are being evaluated and (2) if the projects' NPV profiles cross at a rate less than the firm's cost of capital.
- \* The NPV and IRR methods can lead to conflicting accept/reject decisions only if (1) mutually exclusive projects are being evaluated and (2) if the projects' NPV profiles cross at a rate greater than the firm's cost of capital.
- \* Any type of project might have multiple rates of return if the IRR is sufficiently high.

That answer is incorrect.

Correct answer:

The NPV and IRR methods can lead to conflicting accept/reject decisions only if (1) mutually exclusive projects are being evaluated and (2) if the projects' NPV profiles cross at a rate less than the firm's cost of capital.

The two conditions which can cause NPV profiles to cross, and thus conflicts to arise between NPV and IRR: 1) when project size differences exists, or 2) when timing differences exist.

-----

A company has determined that its optimal capital structure consists of 40 percent debt and 60 percent equity. Given the following information, calculate the marginal weighted average cost of capital when the capital budget is \$40,000.

$k(d)$  (interest rate on the firm's new debt) = 10%

Net income = \$40,000

Payout ratio = 50%

Tax rate = 40%

$P(0)$  = \$25

Growth = 0%

Shares outstanding = 10,000

Flotation cost on additional equity = 15%

\* 13.69%

\* 11.81%

\* 8.05%

\* 14.28%

\* 7.20%

That answer is incorrect.

Correct answer:

8.05%

First, find the amount of equity and debt needed for a \$40,000 budget:

Debt =  $0.4 \times \$40,000 = \$16,000$ ; Equity =  $0.6 \times \$40,000 = \$24,000$ .

We can find the amount of retained earnings = Net Income(1 - Payout ratio), or RE =  $\$40,000 \times 0.5 = \$20,000$ .

We will need to find the cost of new common equity, because we have only \$20,000 of equity on hand, and we need \$4,000 more!

Find the dividend,  $D_0 = [(0.5)\$40,000]/\# \text{ of Shares} = \$20,000/10,000 = \$2.00$ .

Then, find the cost of new equity:  $k(e) = D_1/[P_0(1 - F)] + g = \$2.00/[\$25(1 - 0.15)] + 0\% = 0.0941 = 9.41\%$ .

Finally, calculate WACC, using  $k(e) = 0.0941$ , and  $k(d) = 0.10$ , so

$WACC = (D/A)(1 - \text{Tax rate})k(d) + (E/A)k(e)$

$WACC = 0.4(1 - 0.4)(0.10) + 0.6(0.0941) = 0.0805$ , or 8.05%.

-----

Which of the following statements is most correct?

- \* None of the statements are correct.
- \* When choosing between mutually exclusive projects, managers should accept all projects with IRRs greater than the weighted average cost of capital.
- \* Multiple IRRs can occur in cases when project cash flows are normal, but they are more common in cases where project cash flows are nonnormal.
- \* All of the statements are correct.
- \* One of the disadvantages of choosing between mutually exclusive projects on the basis of the discounted payback method is that you might choose the project with the faster payback period but with the lower total return.

That answer is incorrect.

Correct answer:

One of the disadvantages of choosing between mutually exclusive projects on the basis of the discounted payback method is that you might choose the project with the faster payback period but with the lower total return.

The payback and discounted payback methods both ignore cash flows that are paid or received after the payback period. Concerning the other statements: Multiple IRRs can occur only for projects with nonnormal cash flows. Mutually exclusive projects implies that only one project should be chosen. The project with the highest NPV should be chosen.

-----

Which of the following equations correctly illustrates the calculation of the cost of equity using the Bond-Yield-plus-Risk-Premium approach?

- \* Required rate of return on outstanding debt + subjective risk premium
- \* Before-tax yield on outstanding debt + subjective risk premium
- \* None of these answers
- \* After-tax cost of debt + subjective risk premium
- \* Annual dividend/current stock price + subjective risk premium
- \* Yield to maturity on outstanding long-term debt + subjective risk premium

That answer is incorrect.

Correct answer:

Yield to maturity on outstanding long-term debt + subjective risk premium

The Bond-Yield-plus-Risk-Premium approach is a rather ad hoc method used by financial managers to determine the cost of common equity. Under this approach, a subjective risk premium is added to the yield to maturity of the firm's outstanding long-term debt. Typically, senior debt is used when possible, however, due to the ad hoc nature of this approach, there is abounding room for flexibility. This large degree of flexibility both adds to and detracts from the attractiveness of Bond-Yield-plus-Risk-Premium approach.

-----

Ace Consulting, a multinational corporate finance consulting firm, is examining the data storage division of Intelligent Semiconductor Company. In order to evaluate the proposed expansion of this division, Ace

Consulting is trying to determine its beta. In their analysis, Ace Consulting regresses the monthly return on assets for the data storage division against the average return on assets for the data storage index, a division of the S&P 100. Which of the following techniques most correctly describes this method of identifying individual project betas?

- \* Regression analysis
- \* Scenario analysis
- \* Pure-play method
- \* Situation analysis
- \* Monte Carlo simulation
- \* Accounting Beta method

That answer is incorrect.

Correct answer:

Accounting Beta method

In this example, Ace Consulting is employing the Accounting Beta method to determine the beta of the data storage division of Intelligent Semiconductor. This technique is often used when "pure play" firms cannot be found, or when a more empirical, "firm-specific" analysis is desired. "Monte Carlo simulation, situation analysis," and "scenario analysis" are all techniques for measuring stand-alone risk. While "regression analysis" is an attractive choice, it does not represent the best possible answer.

-----

Which of the following statements is most correct?

- \* When comparing two projects, the project with the higher IRR will also have the higher MIRR.
- \* Both IRR and MIRR can produce multiple rates of return.
- \* The modified internal rate of return (MIRR) of a project increases as the cost of capital increases.
- \* All of these statements are correct.
- \* The internal rate of return (IRR) of a project increases as the cost of capital increases.

That answer is incorrect.

Correct answer:

The modified internal rate of return (MIRR) of a project increases as the cost of capital increases.

The MIRR is dependent on the cost of capital. As the cost of capital increases, so does the terminal value. Because the MIRR is the rate, which equates the PV with the terminal value, the MIRR increases as the terminal value increases.

-----

Copybold Corporation is a start-up firm considering two alternative capital structures--one is conservative and the other aggressive. The conservative capital structure calls for a D/A ratio = 0.25, while the aggressive strategy call for D/A = 0.75. Once the firm selects its target capital structure it envisions two possible scenarios for its operations: Feast or Famine. The Feast scenario has a 60 percent probability of occurring and forecast EBIT in this state is \$60,000. The Famine state has a 40 percent chance of occurring and the EBIT is expected to be \$20,000. Further, if the firm selects the conservative capital structure its cost of debt will be 10 percent, while with the aggressive capital structure its debt cost will be 12 percent. The firm will have \$400,000 in total assets, it will face a 40 percent marginal tax rate, and the book value of equity per share under either scenario is \$10.00 per share.

What is the difference between the EPS forecasts for Feast and Famine under the aggressive capital structure?

- \* \$0
- \* \$2.20
- \* \$2.40
- \* \$1.00
- \* \$1.80

That answer is incorrect.

Correct answer:

\$2.40

Debt = 75% = \$300,000; Equity = 25% = \$100,000; Total assets = \$400,000.

	Feast	Famine
Probability	0.6	0.4
EBIT	\$60,000	\$20,000
Less: Interest	36,000	36,000
EBT	\$24,000	-\$16,000
Less: Taxes	9,600	-6,400
NI	\$14,400	-\$9,600
# shares	10,000	10,000
EPS	\$1.44	-\$0.96

Difference in EPS for conservative capital structure:

$$\text{EPS(Feast)} - \text{EPS(Famine)} = \$1.44 - (-\$0.96) = \$2.40$$

-----

A company just paid a \$2.00 a share dividend on its common stock ( $D(0) = \$2.00$ ). The dividend is expected to grow at a constant rate of 7 percent per year. The stock currently sells for \$42 a share. If the company issues additional stock, it must pay its investment banker a flotation cost of \$1.00 per share. What is the cost of external equity?

- \* 12.30%
- \* 12.22%
- \* 11.88%
- \* 11.76%
- \* 11.98%

That answer is incorrect.

Correct answer:

12.22%



$$D(0) = \$2$$

$$D(1) = \$2(1.07) = \$2.14.$$

Cost of new common equity:

$$k(e) = D(1)/[P(0)(1 - F)] + g = \$2.14/\$41 + 7\% = 12.22\%.$$

-----  
Which of the following statements is most correct?

- \* The debt ratio which maximizes EPS generally exceeds the debt ratio which maximizes share price.
- \* None of these statements are correct.
- \* Increasing financial leverage is one way to increase a firm's basic earning power (BEP).
- \* All of these statements are correct.
- \* Firms with lower fixed costs tend to have greater operating leverage.

That answer is correct!

The other statements are incorrect because: The extent to which the firm uses debt financing does not effect EBIT or total assets. Firms with a high percentage of fixed costs have a high degree of operating leverage by definition.

-----  
The Mike & Laurie Consulting Group Inc. is trying to decide which computer system to purchase. They can purchase state-of-the-art equipment for \$20,000, which they expect to generate cash flows of \$6,000 at the end of each of the next 6 years. Alternatively, they can spend \$12,000 for equipment that can be used for 3 years and generates cash flows of \$6,000 at the end of each year. If the company's cost of capital is 10 percent and both "projects" can be repeated indefinitely, then what is the equivalent annual annuity (EAA) of the more profitable strategy?

- \* \$2,423.74
- \* \$1,407.85
- \* \$1,666.67
- \* \$6,131.56
- \* \$1,174.62

That answer is incorrect.

Correct answer:

\$1,407.85

First, compute the NPV of each project over its initial life. The relevant cash flows for the state-of-the-art equipment are  $CF(0) = -\$20,000$  and  $CF(1-6) = \$6,000$ . Discounting at 10 percent yields  $NPV = \$6,131.56$ .

The relevant CFs for the less advanced equipment are  $CF(0) = -\$12,000$  and  $CF(1-3) = \$6,000$ . Discounting again at 10 percent yields  $NPV = \$2,921.11$ . Next, find the EAA of each project as follows: EAA for the state-of-the-art equipment:  $N = 6$ ;  $I/YR = 10$ ;  $PV = -6,131.56$ ,  $FV = 0$ ; solve for  $PMT = EAA =$

\$1,407.85. EAA less advanced:  $N = 3$ ;  $I/YR = 10$ ;  $PV = \$2,921.11$ ;  $FV = 0$ ; solve for  $PMT = EAA = \$1,174.62$ .

Thus, the state-of-the-art project is more profitable.

-----

The "degree of leverage" concept is designed to show how changes in sales will affect EBIT and EPS. If a 10 percent increase in sales causes EPS to increase from \$1.00 to \$1.50, and if the firm uses no debt, then what is its degree of operating leverage?

- \* 4.2
- \* 3.6
- \* 4.7
- \* 5.0
- \* 5.5

That answer is incorrect.

Correct answer:

5.0

These two equations could be used:

$DTL = (DOL)(DFL)$ .

$EPS(1) = EPS(0)[1 + (DTL)(\%Change\ Sales)]$ .

Note that EPS rises by 50 percent, from \$1.00 to \$1.50, on a 10 percent increase in sales, so

$$1.50 = 1.00[1 + (DTL)(0.1)]$$

$$1.50 = 1 + 0.1\ DTL$$

$$0.1\ DTL = 0.50$$

$$DTL = 5.00.$$

Now  $DTL = 5 = (DOL)(DFL)$

But if Debt = 0, then  $DFL = 1$ , so  $DOL = DTL = 5.0$ .

-----

Clay Industries, a large industrial firm, is considering the development of an underwater drilling system which will greatly increase the productivity of deep-sea petroleum extraction. However, the development of the system involves substantial setup and implementation costs. If Clay Industries chooses to begin developing the new system, the firm will be forced to decline several other promising projects, due to a lack of available investment capital. Which of the following terms most correctly describes the problem faced by Clay Industries?

- \* Diminishing returns problem
- \* Marginal cost problem
- \* Principal/agent problem
- \* Opportunity cost problem
- \* Externality problem

That answer is incorrect.

Correct answer:

Opportunity cost problem

In this example, Clay Industries is faced with several mutually-exclusive projects. If the firm begins to develop the underwater drilling system, it will be forced to decline the acceptance of other projects. This is an opportunity cost problem.

-----

The management of Oively.com, an online research network, has recently gone public. The Company currently has a capital structure comprised of 45% debt and 55% equity. However, the management of the firm believes that an additional debt issuance would allow the firm to increase its ROE, and reach a harmonious balance between risk and reward, thereby maximizing its stock price while simultaneously minimizing the Company's weighted average cost of capital. The corporate finance division of the Company has determined that a conservative debt issuance, bringing the firm's capital structure to 50% debt and 50% equity, would be the ideal situation, and would lead to a theoretical maximization in the firm's stock price. Which of the following terms best describes this proposed capital structure?

- \* Optimal capital structure
- \* Target asset maximization
- \* Marginal asset maximization
- \* Efficiency screening
- \* Target capital structure

That answer is correct!

In this example, the corporate finance division of Oively.com has determined that by incorporating more debt into its asset structure, the firm would maximize its stock price while simultaneously minimizing the WACC. This is an example of the firm's optimal capital structure. The optimal capital structure is defined as the capital structure which balances risk and reward, thereby maximizing the firm's stock price. "Efficiency screening," and "target asset maximization," are essentially fictitious terms.

-----

Intelligent Semiconductor is considering the development of a new data storage medium that will allow tremendous increases in the efficiency of its customer's high-end server lines. The development of the new system will take place in the firm's existing facilities, and the storage costs for the additional equipment are expected to be residual in nature. The following information applies to this project:

Rent expense for the firm's existing facilities (\$10,500)

Initial cash outlay (\$50,000)

- t1: \$15,000
- t2: \$11,000
- t3: \$11,000
- t4: \$15,000
- t5 (\$10,000)
- t6 (\$10,000)
- t7 \$25,000

Discount rate: 9%

Assuming no taxes or related charges, that the initial cash outlay does not include any sunk costs, and a \$0.00 salvage value at t7, what is the NPV of this project?

- \* (\$6,645.79)
- \* \$6,645.79
- \* \$93,354.21
- \* \$18,278.18
- \* (\$16,597.05)
- \* \$6,352.84

That answer is correct!

In this example, the rent cost of \$10,500 represents a sunk cost. Remember that sunk costs are irrelevant in capital budgeting decisions, and should not be incorporated into the calculation. This is because sunk costs are not incremental in nature, and are not directly related to the acceptance of the project in question, i.e. these costs have already been incurred or have already been committed to payment. To determine the NPV of this project is relatively straightforward, simply incorporate the cash flows into the Cash Flow worksheet of your calculator and use 9% as the discount rate. The following illustration details the calculation of NPV in this case:  $\{-\$50,000\} + [\$15,000/1.09] + [11,000/1.1881] + [11,000/1.29503] + [\$15,000/1.41158] + [-\$10,000/1.53862] + [-\$10,000/1.6771] + [\$25,000/1.82804] = (\$6,645.79)$ .

-----  
Which of the following types of risk can be reduced through diversification? Choose the best answer.

- I. Stand-alone risk
- II. Unsystematic risk
- III. Systematic risk
- IV. Market risk
- V. Beta risk
- VI. Diversifiable risk

- \* I, III, VI
- \* I, VI
- \* II, III, V
- \* I, II, VI
- \* II, III, V, VI

That answer is incorrect.

Correct answer:

I, II, VI

Of the risks listed, only unsystematic and stand-alone risk are diversifiable. Unsystematic risk is also referred to as "diversifiable risk," therefore answer VI is correct. Stand-alone risk is defined as the variability of an asset's expected returns if it were the only asset of a firm and the stock of that firm is the only security in an investor's portfolio. This type of risk is definitively reduced through diversification, and is commonly referred to as "unsystematic risk."

Systematic risk measures that part of an assets risk that is inherent regardless of the level of diversification, and is measured by the Beta coefficient. Systematic risk is also referred to as "market risk" and "beta risk."

Corporate risk is defined as the variability of an asset's expected returns without taking into consideration the effects of shareholder diversification. This is one step away from Stand-alone Risk, which measures the risk of an asset not only without taking into consideration the effect of shareholder diversification, but of company diversification as well. Stand-alone risk assumes that the asset in question is the only asset of the firm and that the securities of the firm are the only asset in investors' portfolios. Corporate risk takes into consideration that firms will diversify their asset bases.

-----

Martin Corporation's common stock is currently selling for \$50 per share. The current dividend is \$2.00 per share. If dividends are expected to grow at 6 percent per year and if flotation costs are 10 percent, then what is the firm's cost of retained earnings and what is its cost of new common stock?

- \* 10.71%; 10.24%
- \* 10.24%; 10.71%
- \* 11.38%; 10.71%
- \* 10.24%; 11.38%
- \* 9.31%; 9.86%

That answer is incorrect.

Correct answer:

10.24%; 10.71%

Cost of retained earnings:

$$k(s) = \$2.12/\$50 + 0.06 = 10.24\%.$$

Cost of new common equity:

$$k(e) = \$2.12/(\$50(1-.10)) + 0.06 = 10.71\%.$$

-----

A stock has a beta of 0.44 and the market risk premium is 7.9%. Its dividend growth rate is 4.25% and its P/E ratio is 8.7. If the firm has a dividend payout ratio of 70%, the risk-free rate equals \_\_\_\_\_.

- \* 6.81%
- \* 7.12%
- \* 8.82%
- \* 4.56%

That answer is incorrect.

Correct answer:

8.82%

$$P_0/E_1 = \text{dividend payout}/(k - g)$$

Therefore,  $8.7 = 0.7/(k - 0.0425)$ , giving expected return =  $k = 12.3\%$ .

Now, the CAPM expected return on the stock is given by  $k = R_f + \text{beta} \cdot (R_m - R_f)$ .

Therefore,  $12.3\% = R_f + 0.44 \cdot 7.9\%$ , giving risk-free rate = 8.82%.

-----  
Which of the following may be used as mechanisms to motivate managers to act in the best interest of the stockholders?

- I. Managerial compensation
- II. Direct stockholder intervention
- III. Threat of firing
- IV. Threat of takeover

- \* IV only
- \* I only
- \* I, II, III & IV
- \* III only
- \* I, II & III
- \* II only

That answer is incorrect.

Correct answer:

I, II, III & IV

Managerial compensation may be designed to not only attract and retain the best managerial talent for a firm, but also to align the management's action with the interest of the shareholders. Direct intervention is another mechanism that may be used to motivate management into acting in the owner's best interest. This in practice is executed with a wide degree of success. The threat of firing may also be used as well as the threat of hostile takeovers. The threat of a hostile takeover is strongest when a company is under performing and/or its stock is under valued.

-----  
The following facts apply to your company:

Target capital structure: 50% debt; 50% equity.

EBIT:	\$200 million
Assets:	\$500 million
Tax rate:	40%
Cost of new and old debt:	8%

Based on the residual dividend policy, the payout ratio is 60 percent. How large (in millions of dollars) will the capital budget be?

- \* \$43.2
- \* \$50.0
- \* \$108.0
- \* \$86.4
- \* \$64.8

That answer is incorrect.

Correct answer:

\$86.4

Debt =  $0.5(\text{Assets}) = 0.5(\$500) = \$250$  million.  
Interest =  $0.08(\$250) = \$20$  million.  
EBT = EBIT - I =  $\$200 - \$20 = \$180$ .  
NI =  $\$180 - \text{Taxes} = \$180 - \$180(0.4) = 0.6(\$180) = \$108$  million.  
Dividends =  $\$108(0.6) = \$64.80$  million.  
Retained earnings = NI - D =  $\$108.00 - \$64.80 = \$43.20$  million.

Half of the capital budget will be debt, half will be common equity from retained earnings, so the capital budget will =  $\$86.40$  million.

-----

Clay Industries, a large industrial firm, is evaluating the sales of its existing line of coiled machine tubing. In their analysis, the operating managers of Clay Industries have identified the following information related to the coiled machine tubing division and its product:

Annual fixed operating expenses of \$925,000  
Average variable cost of \$90  
Breakeven quantity of 20,109 units

Which of the following best describes the average variable cost for this product?

- \* \$44
- \* None of these answers is correct.
- \* \$46
- \* \$41.70
- \* \$38
- \* The average selling price of this product cannot be determined from the information provided.

That answer is correct!

To calculate the breakeven quantity for a product, use the following equation:  $\{\text{Fixed operating costs}/[\text{avg. sales price per unit} - \text{variable cost per unit}]\}$ . To determine the average selling price of this product, we must rearrange the standard equation using algebra, in a manner such that the resulting equation resembles the following:  $\{[\$925,000/20,109] + X = \$90\}$ . This equation is further rearranged into the following:  $\{\$46 + X = \$90\}$ . Finally, the ending equation becomes:  $\{X = \$90 - \$46\}$ . Solving for X yields an average variable cost per unit of \$44.

-----

Stromburg Corporation makes surveillance equipment for intelligence organizations. Its sales are \$75,000,000. Fixed costs, including research and development, are \$40,000,000, while variable costs amount to 30 percent of sales. Stromburg plans an expansion which will generate additional fixed costs of \$15,000,000, decrease variable costs to 25 percent of sales, and also permit sales to increase to \$100,000,000. What is Stromburg's degree of operating leverage at the new projected sales level?

- \* 3.50
- \* 3.33
- \* 4.67
- \* 4.20
- \* 3.75

That answer is incorrect.

Correct answer:

3.75

Calculate DOL using new sales, new variable cost percentage, and new fixed costs:

(In millions)

$$\text{DOL(S)} = \frac{S - VC}{S - VC - FC} = \frac{\$100 - \$25}{(\$100 - \$25 - \$55)} = 3.75.$$

-----

Which of the following is not expressly incorporated into the Degree of Total Leverage (DTL) calculation?

- \* Sales
- \* Fixed costs
- \* Variable costs
- \* Interest expense
- \* None of these answers
- \* Common shares outstanding

That answer is incorrect.

Correct answer:

Common shares outstanding

The Degree of Total Leverage (DTL) calculation measures the percentage change in EPS from a given percentage change in sales. The equation used to produce DTL is as follows:

{DTL = [(Sales - Variable Costs) / (Sales - Variable Costs - Fixed Costs - Interest Expense)]. Of all the choices listed, "only the number of common shares outstanding" is not expressly incorporated into the DTL calculation.

-----

Ameriscam, Inc. is considering the issuance of some perpetual preferred stock. The Company's corporate tax rate is 30%, and the yield on its outstanding senior debt is 7.55%. Additionally, Ameriscam has been told by a leading investment bank that if issued, its preferred stock would merit a price of \$40 net of flotation costs and other charges. If issued, the firm plans to dedicate preferred annual dividends of \$2.35 per share. What is the cost of the proposed preferred stock for this firm?

- \* The cost of preferred stock cannot be calculated from the information supplied.
- \* 2.265%
- \* 7.98%
- \* 0.0875%
- \* 5.875%

That answer is incorrect.

Correct answer:

5.875%



The cost of preferred stock can be found by dividing the annual dividend by the issuing price, which is net of any underwriting, or "flotation," charges. The cost of preferred stock in this example is very low. Typically, the cost of preferred stock is greater than the cost of debt but less than the cost of common equity.

-----

Petersen Co. has a capital budget of \$1,200,000. The company wants to maintain a target capital structure, which is 60 percent debt and 40 percent equity. The company forecasts that its net income this year will be \$600,000. If the company follows a residual dividend policy, what will be its payout ratio?

- \* 20%
- \* 80%
- \* 60%
- \* 40%
- \* 0%

That answer is correct!

The amount of new investment, which must be financed with equity, is:  
 $\$1,200,000 \times 40\% = \$480,000$ . Since the firm has \$600,000 of net income only \$120,000 will be left for dividends. This means the payout ratio is  $\$120,000/\$600,000 = 20\%$ .

-----

In theory, the decision-maker should view market risk as being of primary importance. However, within-firm, or corporate, risk is relevant to a firm's

- \* All of the answers are correct.
- \* None of the answers are correct.
- \* Creditors, because it affects the firm's credit worthiness.
- \* Management, because it affects job stability.
- \* Well-diversified stockholders, because it may affect debt capacity and operating income.

That answer is correct!

These are all relevant to a firm's corporate risk, which is measured by the project's impact on uncertainty about the firm's future earnings.

-----

Arizona Rock, an all-equity firm, currently has a beta of 1.25, and  $k(RF) = 7$  percent and  $k(M) = 14$  percent. Suppose the firm sells 10 percent of its assets (beta = 1.25) and purchases the same proportion of new assets with a beta of 1.1. What will be the firm's new overall required rate of return, and what rate of return must the new assets produce in order to leave the stock price unchanged?

- \* 15.750%; 15.645%
- \* 14.750%; 15.750%
- \* 15.645%; 14.700%

\* 15.750%; 14.700%

\* 15.645%; 15.645%

That answer is incorrect.

Correct answer:

15.645%; 14.700%

$b(\text{old, firm}) = 1.25$ .

$k(\text{old, firm}) = 0.07 + (14 - 7)1.25 = 15.75\%$ .

$b(\text{new, firm}) = 0.9(1.25) + 0.1(1.1) = 1.235$ .

$k(\text{new, firm}) = 0.07 + 1.235(0.07) = 15.645\%$ .

$k(\text{new, assets}) = 0.07 + 1.1(0.07) = 14.7\%$ .

-----

In order for the NPV and MIRR methods to consistently produce similar rankings, the projects being examined must possess which of the following characteristics? Choose the best answer.

- \* Projects must be independent and equal in size
- \* Projects must equal in scale and be mutually exclusive
- \* Projects must be profitable and have normal cash flows
- \* Projects must equal in scale and have the same life
- \* Projects must equal in scale and have identical cash flows
- \* Projects must have equal lifespans and normal cash flows

That answer is incorrect.

Correct answer:

Projects must equal in scale and have the same life

When examining mutually-exclusive projects with normal cash flows, the MIRR and NPV methods will ALWAYS produce similar results as long as the projects being examined are equal in size and have the same life.

-----

Which of the following projects would likely produce multiple Internal Rates of Return? Assume a 14% discount rate.

Project A

Initial investment outlay: (\$500,000)

t1: \$900,000

t2: (\$100,000)

t3: (\$100,000)

t4: (\$10,000)

Project B

Initial investment outlay: (\$500,000)

t1: \$0.00  
t2: \$650,000

Project C  
Initial investment outlay: (\$50,000)  
t1: \$0.00  
t2: \$0.00  
t3: \$65,000  
t4: \$0.00  
t5: \$0.00  
t6: \$65,000

Project D  
Initial investment outlay: (\$1,000,000)  
t1: \$675,000  
t2: \$675,000  
t3: (\$1,500)  
t4: \$1,500

Project E  
Initial investment outlay: (\$1,000,000)  
t1: \$0.00  
t2: \$0.00  
t3: \$0.00  
t4: \$0.00  
t5: \$2,000,000

- \* Project A, D, and E
- \* Project A and D
- \* Project C
- \* All of these projects will likely result in multiple Internal Rates of Return.
- \* Project B
- \* Project A

That answer is incorrect.  
Correct answer:  
Project A and D

First of all, the cost of capital is irrelevant in Internal Rate of Return calculations. What is being examined in this example is the determination of "normal" versus "non-normal" projects. Non-normal projects are classified as projects that possess non-normal cash flows.

In evaluating projects with "non-normal cash flows" the Internal Rate of Return method will often produce multiple IRRs which leads to an incorrect accept/reject decision. Non-normal cash flows are defined as cash flows in which the sign changes more than once. Projects A and D involve cash outflows superimposed within their cash inflows, resulting in a sign change from positive to negative and negative to positive. In examining projects such as this, it is advisable to use either the NPV or MIRR methods, which are not subject to the problem of multiple IRRs.

From observation alone, we can determine that project A and D are non-normal projects, and are thus likely to result in multiple IRR calculations. While project B, C and E have periods of zero cash flows, each only has one change of sign in the overall cash flow process, and therefore all three projects should be characterized as "normal" for purposes of examination.

While the cost of capital has been provided, it is not necessary for the determination of the correct answer in this case. What you should look for are projects with non-normal cash flows, and this should not involve

any computational analysis. Besides, the cost of capital is not incorporated into the Internal Rate of Return calculation, rather, it is a component of the NPV and MIRR computational methods.

-----

Cochran Corporation has a weighted average cost of capital of 11 percent for projects of average risk. Projects of below-average risk have a cost of capital of 9 percent, while projects of above-average risk have a cost of capital equal to 13 percent. Projects A and B are mutually exclusive, whereas all other projects are independent. None of the projects will be repeated. The following table summarizes the cash flows, internal rate of return (IRR), and risk of each of the projects.

Year (t)	Project A	Project B	Project C	Project D	Project E	
O	-200,000	-100,000	-100,000	-100,000	-100,000	-100,000
1	66,000	30,000	30,000	30,000	40,000	
2	66,000	30,000	30,000	30,000	25,000	
3	66,000	40,000	30,000	40,000	30,000	
4	66,000	40,000	40,000	50,000	35,000	
IRR	12.11	14.038	10.848	16.636	11.630	
Project Risk	Below Average	Below Average	Average	Above Average	Above Average	

Which projects will the firm select for investment?

- \* Projects: A, D
- \* Projects: B, C, D, and E
- \* Projects: B, D
- \* Projects: B, C, and D
- \* Projects: A, B, and D

That answer is correct!

Look at the NPV, IRR, and hurdle rate for each project:

Project	A	B	C	D	E
Hurdle	9.00%	9.00%	11.00%	13.00%	13.00%
NPV	\$13,822		\$11,998		
IRR	12.11%	14.04%	10.85%	16.64%	11.63%

Projects A and B are mutually exclusive, so we pick project A because it has the largest NPV. Projects C, D, and E are independent so we pick the ones whose IRR exceeds the cost of capital, in this case, just D. Therefore, the projects undertaken are A and D.

-----

Ace Consulting, a corporate finance consulting firm, is examining the operating performance of Microscam Incorporated. In their analysis, Ace Consulting has identified the following information:

Year 1 interest paid \$28,000  
 Year 2 interest paid \$35,000  
 Year 1 sales \$1,675,000  
 Year 2 sales \$1,895,000  
 Year 1 EBIT \$750,000

Year 2 EBIT \$987,500  
Cost of debt 7.70%

Given this information, what is the Degree of Operating Leverage for this firm during the time period in question?

- \* 1.531
- \* 2.431
- \* The Degree of Operating Leverage cannot be calculated due to the fact that an appropriate discount rate has not been provided.
- \* 2.412
- \* 2.618
- \* 0.415

That answer is incorrect.  
Correct answer:  
2.412

To calculate the degree of operating leverage, use the following equation:  $\{\% \text{ change in EBIT} / \% \text{ change in sales}\}$ . In this example, neither the percentage change in sales, neither the percentage change in EBIT are provided, and must be calculated manually. To calculate the percentage change in sales, use the following equation:  $\{[\text{sales in year 2} - \text{sales in year 1}] / \text{sales in year 1}\}$ . Incorporating the given information into this calculation yields a % change in sales of 13.13%. To calculate the percentage change in EBIT, use the same equation as follows:  $\{[\text{EBIT in year 2} - \text{EBIT in year 1}] / \text{EBIT in year 1}\}$ . Incorporating the given information into this calculation yields a percentage change in the EBIT of 31.67%.

Finally, to calculate the Degree of Operating Leverage, divide the percentage change in EBIT by the percentage change in sales, which derives a DOL of 2.412. The "interest paid" information is irrelevant in the calculation of the DOL, rather is incorporated into a determination of the Degree of Financial Leverage. This information has been provided to trick you. Additionally, the Degree of Operating Leverage can be calculated regardless of whether an appropriate discount rate has been provided or not.

-----

If the expected return on the market portfolio increases, the price of a firm's share \_\_\_\_\_, all else equal.

- \* can be all of these answers.
- \* is not affected
- \* decreases
- \* increases

That answer is incorrect.  
Correct answer:  
decreases

In the usual notation,  $P_0 = D_1 / (k - g)$ . Therefore, if the expected return on the stock,  $k$ , increases and all else remains constant, the price will fall. The expected return on the stock,  $k$ , increases if the market's expected rate of return increases.

-----

Lugar Industries is considering an investment in a proposed project which requires an initial expenditure of \$100,000 at  $t = 0$ . This expenditure can be depreciated at the following annual rates:

t	Depreciation Rate
1	20%
2	32%
3	19%
4	12%
5	11%
6	6%

The project has an economic life of six years. The project's revenues are forecasted to be \$90,000 a year. The project's operating costs (not including depreciation) are forecasted to be \$50,000 a year. After six years, the project's estimated pre-tax salvage value is \$10,000. The company's WACC is 10 percent, and its corporate tax rate is 40 percent. What is the project's net present value (NPV)?

- \* \$31,684
- \* \$34,667
- \* \$45,453
- \* \$33,843
- \* \$38,840

That answer is incorrect.

Correct answer:

\$38,840

The cash flows for each of the years are as follows:

0		-100,000	
1	$[90,000 - 50,000 - (100,000)(0.20)](1-0.4) + (100,000)(0.20)$		= 32,000
2	$[90,000 - 50,000 - (100,000)(0.32)](1-0.4) + (100,000)(0.32)$		= 36,800
3	$[90,000 - 50,000 - (100,000)(0.19)](1-0.4) + (100,000)(0.19)$		= 31,600
4	$[90,000 - 50,000 - (100,000)(0.12)](1-0.4) + (100,000)(0.12)$		= 28,800
5	$[90,000 - 50,000 - (100,000)(0.11)](1-0.4) + (100,000)(0.11)$		= 28,400
6	$[90,000 - 50,000 - (100,000)(0.06)](1-0.4) + (100,000)(0.06) + (10,000)(1 - 0.4)$		= 32,400

Enter the cash flows and solve for the NPV = \$38,839.56.

-----

If the IRS lowers the tax rate applicable to firms in a particular category, the optimal debt ratio for that category will \_\_\_\_\_.

- \* not be affected
- \* increase
- \* decrease
- \* insufficient information

That answer is incorrect.

Correct answer:

decrease

If the tax rate is lower, the tax-deductibility of the interest payments on debt becomes less attractive. The

after-tax cost of debt rises, lowering the optimal debt ratio.

-----

A company has an EBIT of \$4 million, and its degree of total leverage is 2.4. The firm's debt consists of \$20 million in bonds with a 10 percent yield to maturity. The company is considering a new production process that will require an increase in fixed costs but a decrease in variable costs. If adopted, the new process will result in a degree of operating leverage of 1.4. The president wants to keep the degree of total leverage at 2.4. If EBIT remains at \$4 million, what amount of bonds must be outstanding to accomplish this (assuming the yield to maturity remains at 10 percent)?

- \* \$16.7 million
- \* \$18.5 million
- \* \$20.1 million
- \* \$19.2 million
- \* \$19.8 million

That answer is correct!

First, find the new DFL:

$$DTL = (DOL)(DFL)$$

$$2.4 = (1.4)(DFL)$$

$$DFL = 1.7143.$$

Then, find the new interest payments in a year:

$$DFL = (EBIT)/(EBIT - I)$$

$$1.7143 = (\$4,000,000)/(\$4,000,000 - I)$$

$$I = \$1,666,686.11.$$

Finally, solve for the new debt level, knowing that the yield to maturity remains at 10%.

$$\text{Debt Value(YTM)} = \text{Interest Payment}$$

$$\text{Debt}(0.10) = \$1,666,686.11$$

$$\text{Debt} = \$16,666,861.11 = \$16.7 \text{ million.}$$

-----

Clay Industries, a large industrial firm, has just released a new process system allowing mining companies to automate much of their copper extraction procedures. While the sales of this process system are expected to be hugely successful, analysts predict that sales of Clay Industries existing products will decline as a result, as customers substitute the new process system for much of the Clay Industries' older drilling components and non-automated process systems. Which of the following terms most correctly describes the problem faced by Clay Industries?

- \* Externality problem
- \* Diminishing returns problem
- \* Cannibalization
- \* Opportunity cost problem
- \* Incremental sales deterioration

That answer is incorrect.

Correct answer:

## Cannibalization

When a new product or service takes sales away from existing products or services, this is often referred to as cannibalization (or erosion). While firms naturally do not wish to cannibalize existing products, often if they do not, other firms will begin to erode their market share. The cannibalization problem is frequently considered in the analysis of new releases of products and services.

-----

As the debt level rises, the cost of equity increases because:

- \* the probability of default increases.
- \* all of these answers.
- \* the variability of EPS increases.
- \* the financial risk increases.

That answer is incorrect.

Correct answer:

all of these answers.

All of the above are reasons why the cost of equity increases as the debt level rises.

-----

Maxvill Motors has annual sales of \$15,000. Its variable costs equal 60 percent of its sales, and its fixed costs equal \$1,000. If the company's sales increase 10 percent, what will be the percentage increase in the company's earnings before interest and taxes (EBIT)?

- \* 18%
- \* 20%
- \* 16%
- \* 12%
- \* 14%

That answer is incorrect.

Correct answer:

12%

First, find EBIT before sales increase:

$$\begin{aligned}\text{EBIT} &= \text{Sales} - (\text{Sales} \times \text{VC}\%) - \text{FC} \\ &= \$15,000 - (\$15,000 \times 0.60) - \$1,000 \\ &= \$5,000.\end{aligned}$$

Now, assuming sales increase by 10% or to  $\$15,000 \times 1.10 = \$16,500$ , calculate the new EBIT.  $\text{EBIT} = \$16,500 - (\$16,500 \times 0.60) - \$1,000 = \$5,600$ .

So, the percentage increase is  $[(\$5,600 - \$5,000)/\$5,000] \times 100 = 12\%$ .

-----



Louisiana Enterprises, an all-equity firm, is considering a new capital investment. Analysis has indicated that the proposed investment has a beta of 0.5 and will generate an expected return of 7 percent. The firm currently has a required return of 10.75 percent and a beta of 1.25. The investment, if undertaken, will double the firm's total assets. If  $k(RF) = 7$  percent and the market return is 10 percent, should the firm undertake the investment?

- \* No; the expected return of the asset (7%) is less than the required return (8.5%).
- \* Yes; the expected return of the asset (7%) exceeds the required return (6.5%).
- \* Yes; the beta of the asset will reduce the risk of the firm.
- \* No; the risk of the asset (beta) will increase the firm's beta.
- \* No; the expected return of the asset is less than the firm's required return, which is 10.75%.

That answer is correct!

Calculate the required return and compare to the expected return.

$$k(s) = k(RF) + (k(M) - k(RF))b = 0.07 + (0.10 - 0.07)0.5 = 0.085 = 8.5\%$$

The expected return of the asset (7%) is less than the required return (8.5%) so the investment should not be made.

-----

The process of planning expenditures on assets whose cash flows are expected to extend beyond one year is known as \_\_\_\_\_.

- \* Net Present Valuing
- \* Capital Budgeting
- \* Optimal Capital Structure
- \* Payback Period
- \* Weighted Average Cost of Capital (WACC)

That answer is incorrect.

Correct answer:  
Capital Budgeting

Capital Budgeting is defined as the process of planning expenditures on assets whose cash flows are expected to extend beyond one year.

-----

A portfolio manager with Mally, Feasance, & Company is examining shares of Melton Industries, a large industrial firm. Assume the following information:

Annual Dividend: \$0.70  
EPS: \$1.65  
Tax Rate: 35%  
Discount Rate: 13.15%  
ROE: 16%

Using this information, what is the expected growth rate of this firm? Assume that the discount rate, tax rate, and ROE are expected to remain stable.

- \* 11.59%
- \* 9.21%
- \* None of these answers
- \* 6.79%
- \* 6.00%
- \* 10.00%

That answer is incorrect.

Correct answer:

9.21%

To calculate the dividend growth rate, assuming a stable ROE figure, use the following equation:

$\{g = ROE(1 - \text{Dividend Payout Ratio})\}$ . While the ROE figure has been provided, the Dividend Payout Ratio must be calculated manually. To find the Dividend Payout Ratio, divide the annual dividend by the EPS figure, giving the following:  $\{\text{Dividend Payout Ratio} = (\$0.70/\$1.65)\}$ . From this equation, we determine that the Dividend Payout Ratio for this firm is 42.42%. Imputing this figure into the Dividend Growth Rate Equation will yield a growth rate of 9.21% for this firm.

As you can see, neither tax rates nor discount rates are incorporated into the calculation.

-----

All else equal, which of the following is/are true about break-even point?

- I. An increase in the sale price per unit increases the break-even quantity.
- II. An increase in the variable cost per unit increases the break-even quantity.
- III. An increase in the fixed costs increases the break-even quantity.

- \* III only
- \* I & II
- \* I only
- \* II & III
- \* I, II & III
- \* II only
- \* I & III

That answer is incorrect.

Correct answer:

II & III

The break-even quantity is the number of units that must be sold to just cover the fixed and variable costs. An increase in revenues per unit will decrease the break-even quantity while an increase in costs per unit will increase the break-even quantity.

-----

Flood Motors is an all-equity firm with 200,000 shares outstanding. The company's EBIT is \$2,000,000 and is expected to remain constant over time. The company pays out all of its earnings each year, so its earnings per share equals its dividends per share. The company's tax rate is 40 percent.

The company is considering issuing \$2 million worth of bonds (at par) and using the proceeds for a stock repurchase. If issued, the bonds would have an estimated yield to maturity of 10 percent. The risk-free rate in the economy is 6.6 percent, and the market risk premium is 6 percent. The company's beta is currently 0.9, but its investment banker's estimate that the company's beta would rise to 1.1 if they proceed with the recapitalization.

Assume that the shares are repurchased at a price equal to the stock market price prior to the recapitalization. What would be the company's stock price following the recapitalization?

- \* \$53.85
- \* \$51.14
- \* \$76.03
- \* \$56.02
- \* \$68.97

That answer is incorrect.

Correct answer:

\$51.14

First, find the company's current cost of capital, dividends per share, and stock price:

$k = 0.066 + (0.06)0.9 = 12\%$ . To find the stock price, you still need the dividends per share or  $DPS = (\$2,000,000(1 - 0.4))/200,000 = \$6.00$ . Thus, the stock price is  $P_0 = \$6.00/0.12 = \$50.00$ . Thus, by issuing \$2,000,000 in new debt the company can repurchase  $\$2,000,000/\$50.00 = 40,000$  shares.

Now after recapitalization, the new cost of capital, DPS, and stock price can be found:  $k = 0.066 + (0.06)1.1 = 13.20\%$ . DPS for the remaining  $(200,000 - 40,000) = 160,000$  shares are thus  $[(\$2,000,000 - (\$2,000,000 \times 0.10))(1 - 0.4)]/160,000 = \$6.75$ . And, finally,  $P_0 = \$6.75/0.132 = \$51.14$ .

-----

Which of the following is/are disadvantages of stock repurchases?

I. If investors are not indifferent between dividends and capital gains, regular repurchase programs could drive them away.

II. The IRS could tax the firm for improper accumulation of capital gains if it felt regular repurchase programs had taken the place of dividends.

III. The firm might end up paying a higher than fair price if it commits to a repurchase program.

- \* II & III
- \* I & III
- \* III only
- \* II only
- \* I only
- \* I, II & III

That answer is incorrect.

Correct answer:

I, II & III

If shareholders are not indifferent between dividends and capital gains, the stock price might increase more with dividends. This is because cash dividends are generally made very regularly, while stock repurchases are irregularly made. Although this has been rarely done for public corporations, the IRS can impose a tax if it believes regular repurchases are being made to avoid paying dividends. If a company's shares are thinly traded, and the firm wishes to repurchase a large number of shares, it could bid up the stock price above the equilibrium price and overpay for the shares.

-----

As the director of capital budgeting for Denver Corporation, you are evaluating two mutually exclusive projects with the following net cash flows:

Year	Project X	Project Z
0	-\$100,000	-\$100,000
1	50,000	10,000
2	40,000	30,000
3	30,000	40,000
4	10,000	60,000

If Denver's cost of capital is 15 percent, which project would you choose?

- \* Project Z, since it has the higher NPV.
- \* Project X, since it has the higher NPV.
- \* Neither project.
- \* Project X, since it has the higher IRR.
- \* Project Z, since it has the higher IRR.

That answer is incorrect.

Correct answer:

Neither project.

(In thousands)

$$\begin{aligned} \text{NPV}(X) &= -100 + 50(\text{PVIF}(15\%,1)) + 40(\text{PVIF}(15\%,2)) + 30(\text{PVIF}(15\%,3)) + 10(\text{PVIF}(15\%,4)) \\ &= -100 + 50(0.8696) + 40(0.7561) + 30(0.6575) + 10(0.5718) \\ &= -0.833 = -\$833. \end{aligned}$$

$$\begin{aligned} \text{NPV}(Z) &= -100 + 10(\text{PVIF}(15\%,1)) + 30(\text{PVIF}(15\%,2)) + 40(\text{PVIF}(15\%,3)) + 60(\text{PVIF}(15\%,4)) \\ &= -100 + 10(0.8696) + 30(0.7561) + 40(0.6575) + 60(0.5718) \\ &= -8.013 = -\$8,013. \end{aligned}$$

At a cost of capital of 15%, both projects have negative NPVs and, thus, both would be rejected.

-----

Which of the following statements is most correct?

- \* Suppose a firm is losing money and thus, is not paying taxes, and that this situation is expected to persist for a few years whether or not the firm uses debt financing. Thus the firm's after-tax cost of debt will equal its before-tax cost of debt.
- \* The bond-yield-plus-risk-premium approach to estimating a firm's cost of common equity involves adding a subjectively determined risk-premium to the market risk-free bond rate.

- \* The reason that a cost of capital is assigned to retained earnings is because these funds are already earning a return in the business, the reason does not involve the opportunity cost principle.
- \* The component cost of preferred stock is expressed as  $k(ps)(1 - T)$ , because preferred stock dividends are treated as fixed charges, similar to the treatment of debt interest.
- \* All of these statements are false.

That answer is correct!

Obviously if the firm is paying no taxes, its after-tax cost of debt will equal its before-tax cost of debt.

-----

Firms with higher operating leverage tend to have \_\_\_\_\_ financial leverage.

- \* lower
- \* same
- \* higher or lower (since the two are not related).
- \* higher

That answer is correct!

Firms with higher operating leverage have a higher fraction of costs in the form of fixed costs and hence, have a higher business risk. This makes them more averse to debt. Consequently, firms with higher operating leverage tend to have lower D/E ratios i.e. lower financial leverage.

-----

The percentage mix of debt, preferred stock and common equity that maximizes a firm's stock price is known as:

- \* Composite Cost of Capital (CCC)
- \* Security Market Line
- \* Weighted Average Cost of Capital (WACC)
- \* Target (Optimal) Capital Structure
- \* Least Cost Structure
- \* Efficient Frontier

That answer is incorrect.

Correct answer:

Target (Optimal) Capital Structure

The Target (Optimal) Capital Structure is defined as the percentages of debt, preferred stock, and common equity that will maximize the firm's stock price.

-----

Stock dividends

- \* must be accompanied by cash dividends.
- \* are similar to stock splits in that they do not change the fundamental position of current shareholders.
- \* have the same effects on financial statements as cash dividends.
- \* are viewed unfavorably by investors and thus should not be used.
- \* have no effect on a firm's balance sheet.

That answer is incorrect.

Correct answer:

are similar to stock splits in that they do not change the fundamental position of current shareholders.

Stock dividends are dividends paid in the form of additional shares of stock rather than in cash. The total number of shares is increased, so earnings, dividends, and price per share all decline. Stock dividends that are used on a regular basis will keep the stock price more or less constrained, that is, within a desired trading range.

-----

Given the following net cash flows, determine the IRR of the project:

Time	Net cash flow
0	\$1,520
1	-1,000
2	-1,500
3	500

- \* 36%
- \* 28%
- \* 32%
- \* 24%
- \* 20%

That answer is incorrect.

Correct answer:

24%

Time line:

0	1	2	3	Periods
1,520	-1,000	-1,500	500	

Financial calculator solution: Using cash flows,

Inputs: CF(0) = 1,520; CF(1) = -1,000; CF(2) = -1,500; CF(3) = 500.

Output: IRR% = 23.98%.

-----

International Transport Company is considering building a new facility in Seattle. If the company goes ahead with the project, it will spend \$2 million immediately (at  $t = 0$ ) and another \$2 million at the end of Year 1 ( $t = 1$ ). It will then receive net cash flows of \$1 million at the end of Years 2 - 5, and it expects to sell the property for \$2 million at the end of Year 6. The company's cost of capital is 12 percent, and it

uses the modified IRR criterion for capital budgeting decisions. Which of the following statements is most correct?

\* The regular IRR is less than the cost of capital. Under this condition, the modified IRR will also be less than the regular IRR.

\* The project should be accepted because the modified IRR is greater than the cost of capital.

\* If the regular IRR is less than the cost of capital, then the modified IRR will be greater than the regular IRR. That situation applies in this case.

\* The project should be rejected because the modified IRR is less than the regular IRR.

\* Given the data in the problem, the modified IRR criterion indicates that the project should be accepted. However, the NPV is negative. This demonstrates that the modified IRR criterion is not always a valid decision method for projects such as this one.

That answer is incorrect.

Correct answer:

If the regular IRR is less than the cost of capital, then the modified IRR will be greater than the regular IRR. That situation applies in this case.

$$PV(\text{Outflows}) = -\$2,000,000 - \$2,000,000/1.12 = -\$3,785,714.$$

$$\begin{aligned} TV(\text{Inflows}) &= \$1,000,000(FVIFA(12\%,4))(1.12) + \$2,000,000 \\ &= \$1,000,000(4.7793)(1.12) + \$2,000,000 = \$7,352,816. \end{aligned}$$

$$1 + \text{MIRR} = [7,352,816/3,785,714]^{1/6}; \text{MIRR} = 11.7\%.$$

Since the MIRR is less than the cost of capital, the IRR is less than the MIRR.

-----  
An investment of \$1,000 will return \$60 annually forever. What is its internal rate of return?

\* 6.00%

\* 60.00%

\* 16.67%

\* cannot be determined

\* 0.60%

That answer is correct!

$$\$1,000 = \$60/\text{Irr}; \text{IRR} = 0.06 = 6\%.$$

-----  
Which of the following statements is most correct?

\* We ideally would like to use historical measures of the component costs from prior financing in estimating the appropriate weighted average cost of capital.

\* The cost of a new equity issuance could possibly be lower than the cost of retained earnings if the market risk premium and risk-free rate decline by a substantial amount.

\* None of these statements.

\* In the weighted average cost of capital calculation, we must adjust the cost of preferred stock for the tax

exclusion of 70% of dividend income.

- \* All of these statements.

That answer is incorrect.

Correct answer:

None of these statements.

Unlike interest expense on debt, preferred dividends are not deductible, hence there are no tax savings associated with the use of preferred stock. The component costs of WACC should reflect the costs of new financing not historical measures. The cost of issuing new equity is always greater than the cost of retained earnings because of the existence of flotation costs.

-----

Rapacity Consultants has just finished a project feasibility study for a cash-rich firm at a cost of \$3 million. The consultants have concluded after much analysis that the project's cash flows have a net present value of \$1.3 million and a payback period of 5.3 years. The firm should:

- \* reject the project since it has a long payback period.
- \* reject the project since it has a negative NPV.
- \* none of these answers.
- \* accept the project since it has a positive NPV.

That answer is incorrect.

Correct answer:

accept the project since it has a positive NPV.

The \$3 million spent on consultants represent sunk costs and must be ignored while looking toward the future. In that direction, the project has a positive NPV and should be accepted.

-----

The firm's target capital structure is consistent with which of the following?

- \* Minimum cost of equity.
- \* Maximum earnings per share (EPS).
- \* Minimum cost of debt.
- \* Minimum risk.
- \* Minimum weighted average cost of capital (WACC).

That answer is incorrect.

Correct answer:

Minimum weighted average cost of capital (WACC).

The target capital structure is the mix of debt, preferred stock, and common equity with which the firm plans to raise capital.

-----



Consider the following three projects:

Project A

Initial cash outflow: \$1,000,000

Cash inflows as follows

t1: \$500,000  
t2: \$450,000  
t3: \$150,000  
t4: \$150,000  
t5: \$150,000

Project B

Initial cash outflow: \$1,000,000

Cash inflows as follows

t1: \$150,000  
t2: \$150,000  
t3: \$150,000  
t4: \$450,000  
t5: \$500,000

Project C

Initial cash outflow \$1,000,000

Cash inflows as follows

t1: \$280,000  
t2: \$280,000  
t3: \$280,000  
t4: \$280,000  
t5: \$280,000

Assuming no taxes, an 8.5% cost of capital, along with a \$0.00 salvage value at the end of the fifth year, what is the NPV of each project? Additionally, which of the three projects has the steepest NPV profile?

\* Project A NPV: \$276,837; Project B NPV: \$40,334; Project C NPV: \$103,380; Project A has a steepest NPV profile

\* Project A NPV: \$ 267,837; Project B NPV: \$44,330, Project C NPV: \$135,820; Project A has a steepest NPV profile

\* Project A NPV: \$168,513.54 Project B NPV: \$40,334; Project C NPV: \$103,380; Project B has a steepest NPV profile

\* Project A NPV: \$168,531.54; Project B NPV: \$40,334; Project C NPV: \$103,380; Project C has a steepest NPV profile

\* Project A NPV: \$168,513.54, Project B NPV: \$14,550; Project C NPV: \$103,380; Project B has the steepest NPV profile

\* Project A NPV: \$276,837; Project B NPV: \$114,550; Project C NPV: \$135,820; Project A has a steepest NPV profile

That answer is incorrect.

Correct answer:

Project A NPV: \$168,513.54 Project B NPV: \$40,334; Project C NPV: \$103,380; Project B has a steepest NPV profile

Due to the fact that project B is characterized by having the majority of its cash inflows occurring during later time periods, it is more sensitive to changes in the cost of capital. This fact is exemplified by a steeper NPV profile.

-----

Intelligent Semiconductor, a diversified technology company, is considering two mutually-exclusive projects. Assume the following information:

Project A  
Initial cash outlay: (\$500,000)  
t1: \$125,000  
t2: \$125,000  
t3: \$155,000  
t4: \$285,000  
Cost of capital 11.35%

Project B  
Initial cash outlay (\$395,000)  
t1: \$170,000  
t2: \$160,000  
t3: \$175,000  
Cost of capital 11.35%

Assuming no taxes, a \$0.00 salvage value at the end of each projects' life, and the ability for each project to be replicated identically, identify the superior project according to the Replacement Chain approach. Additionally, what is the NPV and IRR of the superior project over the common life?

- \* Project B, NPV \$25,577.90, IRR 13.30%
- \* Project A, NPV \$18,954.46, IRR 10.33%
- \* Project B, NPV \$35,417.16, IRR 15.67%
- \* Project B, NPV \$35,417.16, IRR 13.30%
- \* The Replacement Chain approach cannot be applied to these projects.
- \* Project A, NPV \$22,256.14, IRR 12.22%

That answer is incorrect.

Correct answer:

Project B, NPV \$35,417.16, IRR 13.30%

The Replacement Chain, or "Common Life" approach, is a useful analysis method which allows two or more projects with unequal lives to be examined. In the Replacement Chain approach, the lifespans of each project being examined are multiplied in such a way that the resulting projects share a "common life."

In this example, Project A has a lifespan of 4 periods, whereas Project B has a lifespan of 3. The common multiple of both is 12, and to transform each project into one which has a twelve period lifespan, multiply project A by 3 and Project B by 4. Doing so will result in the following series of cash flows for Project A:

Project A  
t0 (\$500,000)  
t1: \$125,000  
t2: \$125,000  
t3: \$155,000

t4:  $[\$285,000 + (\$500,000)] = (\$215,000)$   
t5: \$125,000  
t6: \$125,000  
t7: \$155,000  
t8:  $[\$285,000 + (\$500,000)] = (\$215,000)$   
t9: \$125,000  
t10: \$125,000  
t11: \$155,000  
t12: \$285,000

Multiplying project B by 4 will result in the following cash flows:

t0: (\$395,000)  
t1: \$170,000  
t2: \$160,000  
t3:  $[\$175,000 + (\$395,000)] = (\$220,000)$   
t4: \$170,000  
t5: \$160,000  
t6:  $[\$175,000 + (\$395,000)] = (\$220,000)$   
t7: \$170,000  
t8: \$160,000  
t9:  $[\$175,000 + (\$395,000)] = (\$220,000)$   
t10: \$170,000  
t11: \$160,000  
t12: \$175,000

Solving for NPV and IRR will determine that Project B is superior on both figures, with an NPV of \$35,417.16, and an IRR of 13.301%. Project A has a NPV of \$22,256.14 and an IRR of 12.22%.

-----  
Suppose capital gains are taxed at 32% and realized income is taxed at 38%. The tax preference theory implies that as the dividend pay-out ratio is increased, the cost of equity:

- \* increases or decreases.
- \* increases.
- \* remains unaffected.
- \* decreases.

That answer is incorrect.  
Correct answer:  
increases.

Since the capital gains tax rate is lower than the realized income tax rate, investors would prefer to defer the realization of this income through the capital gains component. Hence, increasing the payout ratio will make the stock less attractive and depress the price, raising the cost of equity.

-----  
Clay Industries, a large industrial firm, is examining the capital structure of one of its Lebanese subsidiaries. The management of Clay Industries has identified the following information:

EBIT \$1,000,000  
EPS \$1.88  
Interest paid \$121,590

Sales \$1,940,000  
Cost of debt 6.60%

Given this information, what is the Degree of Financial Leverage for this operating division?

- \* 1.940
- \* 1.138
- \* 1.551
- \* The Degree of Financial Leverage cannot be calculated from the information provided.
- \* 1.197
- \* 1.063

That answer is incorrect.

Correct answer:

1.138

To calculate the DFL, the financial analyst needs to determine the EBIT and interest paid for a predetermined time period. To calculate the Degree of Financial Leverage, the following equation is used:  $\{EBIT/[EBIT - \text{interest paid}]\}$ . Incorporating the given information into this equation yields the following:  $\{EBIT \$1,000,000 / [EBIT \$1,000,000 - \text{interest paid } \$121,590]\} = 1.138$ .

The Degree of Financial Leverage measures the percentage change in EPS which results from a given percentage change in EBIT. Remember that any preferred stock dividends must be incorporated into the DFL calculation, and that the DFL can never be less than one.

-----

Which of the following factors in the discounted cash flow approach to estimating the cost of common equity is the least difficult to estimate?

- \* All of these answers are equally difficult to estimate.
- \* Expected rate of return.
- \* Required return.
- \* Dividend yield.
- \* Expected growth rate.

That answer is incorrect.

Correct answer:

Dividend yield.

It is easy to determine the dividend yield since the dividend and the price of the stock are known. It is more difficult to establish a proper growth rate or beta as required in the other factors.

-----

Which of the following is/are true about the half-year convention followed by MACRS?

- I. The convention shortens the recovery period by one year.
- II. The convention follows the assumption that an asset is retired from active service in the middle of the last year of its service.

III. A recently built property under the 10-year class gets depreciated over the next 11 years.

- \* III only
- \* II only
- \* II only
- \* I only
- \* I, II & III
- \* none of them

That answer is correct!

The half-year convention followed by MACRS assumes that new assets are placed in service in the middle of the year. The convention therefore lengthens the recovery period by one year so that a recently built property under the 10-year class gets depreciated over the next 11 years.

-----

A firm has to pay 1.5% fee to underwriters when it issues new equity. The firm has a dividend payout ratio of 37% and a return on equity of 13.9%. The firm has just announced earnings of \$3.27 per share. If the stock's cost of external equity is 14.9%, how much capital would the firm raise by issuing 6 million shares?

- \* \$111.12 million
- \* none of these answers
- \* \$98.33 million
- \* \$130.55 million

That answer is incorrect.

Correct answer:

\$130.55 million

IF  $F$  is the percentage flotation cost and  $P$  is the amount of new equity raised per new share, then

$P = D1 / [(K_e - g)(1 - F)]$ , where  $K_e$  is the cost of external equity and  $D1$  is next year's expected dividend.

Also,  $g = ROE * \text{retention ratio} = ROE * (1 - \text{payout ratio}) = 13.9\% * (1 - 37\%) = 8.76\%$ .  $D1 = 3.27 * 0.37 * (1 + 8.76\%) = \$1.316$ . Therefore,  $P = 1.316 / [(1 - 1.5\%) * (14.9\% - 8.76\%)] = \$21.76$ . By issuing 6 million shares, the firm will therefore raise  $6 * 21.74 = \$130.55$  million.

-----

Which of the following statements is most correct?

- \* None of the answers are correct.
- \* The modified internal rate of return (MIRR) can never exceed the IRR.
- \* All of the answers are correct.
- \* If the IRR of Project A exceeds the IRR of Project B, then Project A must also have a higher NPV.
- \* If a project with normal cash flows has an IRR which exceeds the cost of capital, then the project must have a positive NPV.

That answer is incorrect.

Correct answer:

If a project with normal cash flows has an IRR which exceeds the cost of capital, then the project must have a positive NPV.

The IRR is the discount rate at which a project's NPV is zero. If a project's IRR exceeds the firm's cost of capital, then its NPV must be positive, since NPV is calculated using the firm's cost of capital to discount project cash flows.

-----

Ace Consulting, a multinational corporate finance consulting firm, is performing an analysis of the East Asian distribution network of Smith, Kleen, and Beetchnutty. Specifically, Ace Consulting is trying to identify the effect of changes in specific variables on the overall efficiency of SKB's distribution process. In their analysis, Ace Consulting identified a "base case" situation using the expected values for each input. Then, Ace modified each variable a few points above and below the base case, holding other variables constant. This was done in an effort to determine the effect of each variable on the overall efficiency of SKB's distribution process. Which of the following choices correctly describes this stand-alone risk measurement technique?

- \* Monte Carlo simulation
- \* Scenario analysis
- \* Case study analysis
- \* Regression analysis
- \* Sensitivity analysis
- \* Relational analysis

That answer is incorrect.

Correct answer:

Sensitivity analysis

In this example, Ace consulting has been conducting a sensitivity analysis. This analysis begins with the identification of a "base case" situation using expected values for each input. Then, a variable is manipulated holding the other variables constant, in an effort to determine the sensitivity of the output to manipulations in each variable. Sensitivity analysis is the most widely used technique for measuring stand-alone risk, and can be performed relatively easily using a commercially available spreadsheet package such as Microsoft Excel.

-----

The Seattle Corporation has been presented with an investment opportunity which will yield cash flows of \$30,000 per year in Years 1 through 4, \$35,000 per year in Years 5 through 9, and \$40,000 in Year 10. This investment will cost the firm \$150,000 today, and the firm's cost of capital is 10 percent. Assume cash flows occur evenly during the year, 1/365th each day. What is the payback period for this investment?

- \* 4.35 years
- \* 4.00 years
- \* 5.23 years
- \* 4.86 years
- \* 6.12 years

That answer is incorrect.

Correct answer:

4.86 years

Using the even cash flow distribution assumption, the project will completely recover initial investment after  $30/35 = 0.86$  of Year 5:

Payback =  $4 + 30/35 = 4.86$  years.

-----

If debt financing is used, which of the following is correct?

- \* The percentage change in net operating income is greater than a given percentage change in net income.
- \* The percentage change in net operating income is less than the percentage change in net income.
- \* The percentage change in net operating income is equal to a given percentage change in net income.
- \* The percentage change in net operating income depends on the interest rate charged on debt.
- \* The degree of operating leverage is greater than 1.

That answer is incorrect.

Correct answer:

The percentage change in net operating income is less than the percentage change in net income.

This is because the interest charges on debt are included in net income and not operating income.

-----

The stand-alone risk of a project is measured by:

- \* the project's impact on the systematic risk of the firm's stock.
- \* the project's impact on the unsystematic risk of the firm's stock.
- \* the variability of the project's projected returns.
- \* the project's impact on the uncertainty about the firm's future earnings.

That answer is incorrect.

Correct answer:

the variability of the project's projected returns.

Standalone risk evaluates the risk of a project ignoring all portfolio aspects by looking at the variability of the project's projected returns.

-----

If a firm adheres strictly to the residual dividend policy, a sale of new common stock by the company would suggest that \_\_\_\_\_.

- \* the dividend payout ratio is decreasing
- \* the dividend payout ratio has remained constant

- \* the dollar amount of investments has decreased
- \* the dividend payout ratio is increasing
- \* no dividends were paid for the year

That answer is incorrect.

Correct answer:

no dividends were paid for the year

The residual dividend model is a model in which the dividend paid is set equal to the actual earnings minus the amount of retained earnings necessary to finance the firm's optimal capital budget. A firm follows 4 steps when using this model:

1. The optimal capital budget is determined.
2. The amount of equity needed to finance that budget, given its target capital structure, is determined.
3. Retained earnings are used to meet equity requirements to the extent possible.
4. Dividends are paid only if more earnings are available than are needed to support the optimal capital budget.

As long as the firm finances with the optimal mix of debt and equity, and provided it uses only internally generated equity (retained earnings), then the marginal cost of each new dollar of capital will be minimized. Internally generated equity is available for financing some new investment, but beyond that amount, the firm must finance through more expensive common stock. At this point where new stock must be sold, the cost of equity and the marginal cost of capital, increases.

-----  
Which of the following statements is most correct?

- \* Stock splits reduce the number of shares outstanding.
- \* A key advantage of the residual dividend policy is that it usually results in a stable dividend policy, which is attractive to investors.
- \* A reduction in the capital gains rate should work to discourage corporations from repurchasing their shares.
- \* The bird-in-hand theory of dividends suggests that firms that increase their dividend payout should expect to realize a higher share price and a lower cost of equity capital.

That answer is incorrect.

Correct answer:

The bird-in-hand theory of dividends suggests that firms that increase their dividend payout should expect to realize a higher share price and a lower cost of equity capital.

The main conclusion of MM's irrelevance theory is that dividend policy does not affect the required rate of return on equity. Gordon-Lintner disagreed stating that  $k(s)$  decreases as the dividend payout is increased because investors are less certain of receiving the capital gains which should result from retaining earnings than they are of receiving dividends. They said that investors value expected dividends more highly than expected capital gains because the dividend yield is less risky than the growth component in the total expected return equation,  $k(s) = D1/P_0 + g$ .

MM disagreed and theorized that  $k(s)$  is independent of dividend policy, implying that investors are indifferent between dividends and capital gains. MM called the Gordon-Lintner's study the bird-in-the-hand



fallacy, because MM thought the riskiness of the firm's cash flows to investors in the long run is determined by the riskiness of the operating cash flows, not by dividend policy.

-----

Consider the following argument: "By selling predetermined amounts of stock in an environment of no taxes or transaction costs, investors can create their own dividend policy. For example, a shareholder that wants a 5% dividend can "create" it by selling 5% of her stock. Conversely, if a company pays a higher dividend than an investor desires, the investor can use the unwanted portion of this dividend to purchase additional stock."

This argument applies to which of the following theories? Choose the best answer.

- \* Dividend Relevance Theory
- \* Tax Preference Theory
- \* Trade-off Theory
- \* Bird-in-hand Theory
- \* Dividend Irrelevance Theory

That answer is incorrect.

Correct answer:

Dividend Irrelevance Theory

Modigliani and Miller established the Dividend Irrelevance Theory, which stated that in an environment of no taxes or transaction costs, dividend policy is irrelevant. Modigliani and Miller grounded this assumption in the fact that in such an environment, investors could create their own dividend policy by selling and buying shares of stock.

-----

Which of the following statements is most correct?

- \* One advantage of adopting a residual dividend policy is that it makes it easier for corporations to maintain dividend clienteles.
- \* None of these answers are correct.
- \* The clientele effect can explain why firms often change their dividend policies.
- \* The bird-in-hand theory would predict that companies could decrease their cost of equity financing by raising their dividend payout.
- \* All of these answers are correct.

That answer is incorrect.

Correct answer:

The bird-in-hand theory would predict that companies could decrease their cost of equity financing by raising their dividend payout.

The main conclusion of MM's irrelevance theory is that dividend policy does not affect the required rate of return on equity. Gordon-Lintner disagreed stating that  $k(s)$  decreases as the dividend payout is increased because investors are less certain of receiving the capital gains which should result from retaining earnings than they are of receiving dividends. They said that investors value expected dividends more highly than expected capital gains because the dividend yield is less risky than the growth component in the total expected return equation,  $k(s) = D1/P_0 + g$ .

MM disagreed and theorized that  $k(s)$  is independent of dividend policy, implying that investors are indifferent between dividends and capital gains. MM called the Gordon-Lintner's study the bird-in-the-hand fallacy, because MM thought the riskiness of the firm's cash flows to investors in the long run is determined by the riskiness of the operating cash flows, not by dividend policy.

-----

Which of the following methods of evaluating capital projects incorporate an explicit discount rate into the equation?

- \* Net Present Value, Payback Period
- \* Internal Rate of Return, Modified Internal Rate of Return
- \* Discounted Payback Period, Net Present Value, Payback Period
- \* Discounted Payback Period, Net Present Value, Modified Internal Rate of Return
- \* Discounted Payback Period, Net Present Value, Internal Rate of Return

That answer is incorrect.

Correct answer:

Discounted Payback Period, Net Present Value, Modified Internal Rate of Return

Of the methods for evaluating capital projects, the Net Present Value, Modified Internal Rate of Return, and Discounted Payback Period Methods incorporate an explicit discount rate into their equations. This discount rate is often referred to as the "cost of capital" for the project being examined.

Remember that the Internal Rate of Return equation does not involve the incorporation of an explicit discount rate, rather solves to find that rate which equates the present value of a project's cash inflows with that of its cash outflows. Additionally, the "Payback Period" method does not involve an explicit discount rate, rather fails to incorporate any form of discounting into its calculation. The Payback Period is an overtly simplistic method, and as such, the figures produced by this method should be viewed with a degree of caution.

-----

Which of the following figures is not explicitly incorporated into the earnings per share (EPS) calculation?

- \* Interest Expense
- \* Sales
- \* Fixed Costs
- \* Tax Rate
- \* Weighted Average Cost of Capital
- \* Variable Costs

That answer is incorrect.

Correct answer:

Weighted Average Cost of Capital

The WACC is not incorporated into the EPS calculation. The EPS calculation is found by the following equation:

{EPS = [(Sales - Fixed Costs - Variable Costs - Interest Expense)(1 - Tax Rate)] / [# of Common Shares Outstanding]}

Additionally, the EPS figure can be found by:

{EPS = [(EBIT - Interest Expense)(1 - Tax Rate) / # of Common Shares Outstanding]}.

-----

The trade-off theory of capital structure implies that:

- \* firms issue debt up to the level where the total value added by the debt tax shield is offset by expected bankruptcy costs.
- \* firms will use debt up to the level where the flotation cost of new debt equals that of issuing more equity, thus minimizing the costs of raising capital.
- \* managers are uncomfortable with either too much debt or too much equity and hence, tend to choose debt ratios around 0.40 to 0.60.
- \* none of these answers.

That answer is incorrect.

Correct answer:

none of these answers.

According to the trade-off theory of capital structure, firms issue debt up to the level where the additional value added by the debt tax shield for another dollar of capital raised is offset by expected bankruptcy costs. This ensures that with only these two effects, the firm's stock price is maximized. Clearly, at this point, the total value added by the debt tax shield exceeds the expected bankruptcy costs.

-----

PQR Manufacturing Corporation has \$1,500,000 in debt outstanding. The company's before-tax cost of debt is 10 percent. Sales for the year totaled \$3,500,000 and variable costs were 60 percent of sales. Net income was equal to \$600,000 and the company's tax rate was 40 percent. If PQR's degree of total leverage is equal to 1.40, what is its degree of operating leverage?

- \* 1.15
- \* 1.22
- \* 2.68
- \* 1.12
- \* 1.00

That answer is incorrect.

Correct answer:

1.22

First, calculate PQR's DFL as  $EBIT / (EBIT - I)$ . Interest expense (I) on the debt is  $\$1,500,000(10\%) = \$150,000$ . We can work backwards from NI to find EBIT as follows:  $EBT = NI / (1 - T)$  or  $\$600,000 / 0.6 = \$1,000,000$ .  $EBIT = EBT + I$  or  $\$1,000,000 + \$150,000 = \$1,150,000$ . DFL is thus  $\$1,150,000 / (\$1,150,000 - \$150,000) = 1.15$ . Recognizing  $DTL = DFL \times DOL$ , we can solve  $1.40 = 1.15 \times DOL$  for  $DOL = 1.22$ .

-----

Which of the following statements is most correct?

- \* None of these answers.
- \* All else equal, an increase in a company's stock price will increase the marginal cost of retained earnings.
- \* All of these answers.
- \* All else equal, an increase in a company's stock price will increase the marginal cost of issuing new common equity.
- \* If a company's tax rate increases, but the yield to maturity of its noncallable bonds remains the same, the company's marginal cost of debt capital will fall.

That answer is incorrect.

Correct answer:

If a company's tax rate increases, but the yield to maturity of its noncallable bonds remains the same, the company's marginal cost of debt capital will fall.

The debt cost used to calculate a firm's WACC is  $k(d)(1 - T)$ .

If  $k(d)$  remains constant but  $T$  increases, then the term  $(1 - T)$  decreases and the value of the entire equation,  $k(d)(1 - T)$ , decreases.

$k(d)(1 - T)$  = after-tax component cost of debt, where  $T$  is the firm's marginal tax rate.

-----

Which of the following factors influence business risk?

- I. Raw materials price variability
- II. Operating leverage
- III. The treasury yield curve
- IV. Variability in the cost of debt
- V. Variability in demand for a firm's products
- VI. Variability in the prices of a firm's products

- \* I, II, V, VI
- \* I, II, IV, V, VI
- \* I, II, III, IV, V, VI
- \* I, III, III, IV
- \* I, V, VI

That answer is correct!

Business risk measures the riskiness of a firm's assets if it were to use no debt. Therefore, answers III and IV are incorrect. Business risk is present because of uncertainty surrounding the success of a firm, and this uncertainty is anchored upon variability in a range of factors, including the demand for a firm's products/services, raw materials prices, and the prices of the firm's existing products/services.

Additionally, operating leverage, defined as the extent to which operating costs are fixed, is an important component of business risk. Business risk is the most important determinant of a firm's optimal capital structure, and it is imperative for the CFA candidate to completely understand the mechanics and components of business risk, as well as the relationships between these components.

-----

The president of Real Time Inc. has asked you to evaluate the proposed acquisition of a new computer. The computer's price is \$40,000, and it falls into the MACRS 3-year class. Purchase of the computer would require an increase in net working capital of \$2,000. The computer would increase the firm's before-tax revenues by \$20,000 per year but would also increase operating costs by \$5,000 per year. The computer is expected to be used for 3 years and then be sold for \$25,000. The firm's marginal tax rate is 40 percent, and the project's cost of capital is 14 percent.

What is the total value of the terminal year non-operating cash flows at the end of Year 3?

- \* \$18,120
- \* \$25,000
- \* \$21,000
- \* \$19,000
- \* \$27,000

That answer is correct!

Additional Year 3 cash flows:

	3	
Salvage value	\$25,000	
Tax on Salvage value	(8,880)*	
Recovery of NWC		2,000
	\$18,120	

\*(Market value - Book value)(Tax rate)  
(\$25,000 - \$2,800)(0.40) = \$8,880.

-----

Which of the following projects is likely to produce multiple Internal Rates of Return.

Project A

Initial investment outlay: (\$1,000,000)

t1: \$0.00

t2: \$0.00

t3: \$0.00

t4: \$0.00

t5: \$0.00

t6: \$10,000,000

Project B

Initial investment outlay: (\$1,000,000)

t1: \$500,000

t2: \$500,000

t3: \$500,000

t4: \$0.01

Project C

Initial investment outlay: (\$1,000,000)

t1: \$800,000  
t2: (\$100,000)  
t3: \$550,000

Project D  
Initial investment outlay: (\$500,000)  
t1: \$400,000  
t2: (\$1,000)  
t3: \$230,000  
t4: (\$50,000)

- \* Project D
- \* Project A, C and D
- \* Project A
- \* Project B
- \* Project C and D
- \* Project C

That answer is incorrect.  
Correct answer:  
Project C

In evaluating projects with "non-normal cash flows" the Internal Rate of Return method will often produce multiple IRRs calculation which leads to an incorrect accept/reject decision. Non-normal cash flows are defined as cash flows in which the sign changes more than once. Projects C and D involve cash outflows superimposed within their cash inflows, resulting in a sign change from positive to negative and negative to positive. In examining projects such as this, it is advisable to use either the NPV or MIRR methods, which are not subject to the problem of multiple IRRs associated with the traditional IRR method.

From observation alone, we can determine that project C and D are non-normal projects, and are thus likely to result in multiple IRRs. While project A is somewhat unusual in the fact that the first five periods produce no cash flows at all, there is only one sign change present in its cash flows, and thus is characterized as a "normal" project.

-----

While evaluating a project using net income figures, you must:

- \* subtract all non-cash net expenses.
- \* none of these answers.
- \* add back all non-cash net expenses.
- \* add back depreciation.

That answer is incorrect.  
Correct answer:  
add back all non-cash net expenses.

In capital budgeting, annual cash flows, not accounting income, are used to evaluate a project. Hence, you must add back all non-cash net expenses, defined as total non-cash expenses - total non-cash revenues. You must also ignore financing costs.

-----

Byron Corporation's present capital structure, which is also its target capital structure, is 40 percent debt and 60 percent common equity. Next year's net income is projected to be \$21,000, and Byron's payout ratio is 30 percent. The company's earnings and dividends are growing at a constant rate of 5 percent; the last dividend was \$2.00; and the current equilibrium stock price is \$21.88. Byron can raise all the debt financing it needs at 14 percent. If Byron issues new common stock, a 20 percent flotation cost will be incurred. The firm's marginal tax rate is 40 percent.

Assume that at one point along the marginal cost of capital schedule the component cost of equity is 18 percent. What is the Weighted Average Cost of Capital (WACC) at that point?

- \* 16.4%
- \* 14.2%
- \* 10.8%
- \* 13.6%
- \* 18.0%

That answer is incorrect.

Correct answer:

14.2%

MCC (Marginal Cost of Capital) =  $0.4(0.14)(1 - 0.4) + 0.6(0.18) = 0.142 = 14.2\%$ .

-----

Consider the following information for a company.

Common Stock Price \$53.25  
Preferred Stock Par Price \$100  
Preferred Dividend \$10  
Debt Rating BB+  
Owners Equity 25%  
Preferred Stock Flotation Cost 2.5%  
The Preferred Stock is issued at Par

Calculate the component cost of this newly issued preferred stock.

- \* 10%
- \* 2.5%
- \* 18.78%
- \* 12.5%
- \* 10.26%

That answer is incorrect.

Correct answer:

10.26%

The component cost of preferred stock is the dividend divided by issue price minus flotation cost. In this case the component cost of preferred stock =  $\$10 / (100 - 2.5) = 10.26\%$ .

-----

Industries which are cyclical and heavily oriented toward research tend to have high levels of \_\_\_\_\_. Industries which are subject to high levels of lawsuits tend to high levels of \_\_\_\_\_.

- \* debt; equity
- \* equity; equity
- \* equity; debt
- \* debt; debt

That answer is incorrect.

Correct answer:

equity; equity

Cyclical business conditions, high dependence on research and development and higher expected liabilities are all indicative of high business risks. This makes firms more risk-averse to debt.

-----

The WACC of a firm equals 10.67%. The pre-tax cost of debt equals 8.4%, the firm pays 38% taxes and the firm's equity holders expect a rate of return of 17%. The firm's debt-to-equity ratio equals \_\_\_\_\_.

- \* 1.41
- \* 0.72
- \* 1.16
- \* 0.86

That answer is incorrect.

Correct answer:

1.16

Let  $E/(D+E) = A$ . Then,

$WACC = (1-A)*(1-t)*RD + A*RE$ , where  $t$  is the tax rate. Therefore,

$10.67\% = (1-A)*(1-38\%)*8.4\% + A*17\%$ . Hence,  $A = E/(D+E) = 0.463$  and  $(D+E)/E = 1/0.463 = 2.16$ . This gives  $D/E = 1.16$ .

-----

Which of the following are methods of estimating a company's Cost of Retained Earnings?

- I. CAPM
- II. CANSLIM
- III. DCF Method
- IV. Bond-Yield-plus-Risk-Premium
- V. Least Cost Debt vs. Equity

- \* I, III, IV, & V
- \* I, II, III, IV, & V
- \* I, III & IV
- \* II only
- \* I only



\* I & III

That answer is incorrect.

Correct answer:

I, III & IV

The Capital Asset Pricing Model (CAPM), Discounted Cash Flow (DCF method), and Bond-Yield-plus-Risk-Premium methods may all be used to estimate a firm's Cost of Retained Earnings.

-----

Ameriscam, Inc. is considering the issuance of some junior subordinated debt. The Company's combined state/federal corporate tax rate is 30%, and the coupon on its outstanding senior debt is 7.55%. The proposed debt would pay an annual coupon. Very recently, Ameriscam has met with a corporate finance firm, who advised the Company that the pre-tax cost of a debt issuance would be 7.70%; Ameriscam's finance division mirrored these findings. A month earlier, a study in a popular financial magazine found that shareholder's require a 7.95% rate of return on similar investments. Which of the following represents the best answer for Ameriscam's estimated after-tax cost of debt for this proposed debt issuance?

\* 5.425%

\* The after-tax cost of debt cannot be determined from the information provided.

\* 5.565%

\* 5.39%

\* 5.285%

That answer is incorrect.

Correct answer:

5.39%

Remember that in calculating the after-tax cost of debt for new debt issues, the MARGINAL cost of issuing new debt is the most relevant measure. In this example, the marginal cost of debt is given as 7.70%, and the after-tax cost of debt capital is found by multiplying  $(1 - \text{corporate tax rate})$  by this figure. Specifically, the calculation of the after-tax cost of debt for Ameriscam is as follows:  $\{\text{pre-tax cost of issuing new debt } 7.70\% * [1 - \text{combined state/federal tax rate } 30\%]\} = 5.39\%$ . While the coupon rate on the firm's outstanding senior debt is often used as a proxy, this number is significantly inferior to the use of marginal figures. What is relevant in this example is the cost of new debt, and this can best be approximated by using the marginal cost of a new debt issue. Often, in capital budgeting and related corporate finance decisions, the only available figures are related to the cost and yield of outstanding debt, and in these instances, using the cost of outstanding debt is very appropriate. However, in this example, using the cost of existing debt does not yield the best possible answer.

-----

Suppose capital gains are taxed at 28% and realized income is taxed at 40%. The tax preference theory implies that as the dividend pay-out ratio is increased, the stock price:

\* increases or decreases.

\* decreases.

\* increases.

\* remains unaffected.

That answer is incorrect.

Correct answer:  
decreases.

Since the capital gains tax rate is lower than the realized income tax rate, investors would prefer to defer the realization of this income through the capital gains component. Hence, increasing the payout ratio will make the stock less attractive and depress the price.

-----

When evaluating a new project, the firm should consider all of the following factors except:

- \* Previous expenditures associated with a market test to determine the feasibility of the project, if the expenditures have been expensed for tax purposes.
- \* Changes in working capital attributable to the project.
- \* All of these statements should be considered.
- \* The current market value of any equipment to be replaced.
- \* The resulting difference in depreciation expense if the project involves replacement.

That answer is correct!

Previous expenditures, which are sunk costs, have already been committed and are not affected by the decision under consideration. Hence, they are not relevant cash flows.

-----

The Present Value of a project's cash flows when its cost of capital equals its internal rate of return :

- \* equals zero.
- \* is positive.
- \* is negative.
- \* could be all of these answers.

That answer is incorrect.

Correct answer:  
is positive.

The IRR is by definition the discount rate at which the NPV = 0. Therefore, at this point, the PV is greater than zero, since the initial outlay is always non-zero and  $NPV = PV - \text{cash outlay}$ .

-----

J. Ross and Sons Inc. has a target capital structure that calls for 40 percent debt, 10 percent preferred stock, and 50 percent common equity. The firm's current after-tax cost of debt is 6 percent, and it can sell as much debt as it wishes at this rate. The firm's preferred stock currently sells for \$90 a share and pays a dividend of \$10 per share; however, the firm will net only \$80 per share from the sale of new preferred stock. Ross expects to retain \$15,000 in earnings over the next year. Ross' common stock currently sells for \$40 per share, but the firm will net only \$34 per share from the sale of new common stock. The firm

recently paid a dividend of \$2 per share on its common stock, and investors expect the dividend to grow indefinitely at a constant rate of 10 percent per year.

What will be the WACC above the break point?

- \* 11.9%
- \* 8.3%
- \* 12.5%
- \* 14.1%
- \* 10.6%

That answer is correct!

Preferred stock return:  $10/80 = 12.5\%$

WACC =  $6\%(0.40) + 12.5\%(0.10) + 16.5\%(0.50) = 11.90\%$ .

-----

Polk Products is considering an investment project with the following cash flows:

t	Cash Flow
0	-100,000
1	40,000
2	90,000
3	30,000
4	60,000

The company has a 10 percent cost of capital. What is the project's discounted payback?

- \* 2.67 years
- \* 1.86 years
- \* 2.49 years
- \* 1.67 years
- \* 2.11 years

That answer is incorrect.

Correct answer:

1.86 years

The PV of t = 1 CF is found as follows:  $N = 1$ ,  $I = 10$ ,  $PMT = 0$ ,  $FV = 40,000$ , and, thus  $PV = -\$36,363.64$ . Similarly, find the PV of t = 2 CF which is  $\$74,380.17$ . Since the sum of these PVs is greater than the t = 0 CF of  $\$100,000$ , we know the discounted payback is less than two years. We can now solve for the discounted payback period as follows:

$DP = 1 + (\$100,000 - \$36,363.64)/\$74,380.17 = 1.86$ .

-----

Your company is choosing between the following non-repeatable, equally risky, mutually exclusive projects with the cash flows shown below. Your cost of capital is 10 percent. How much value will your firm sacrifice if it selects the project with the higher IRR?

Project S:

0		1	2	3
-1,000	500	500	500	

Project L:

0		1		2		3		4		5
-2,000	668.76	668.76	668.76	668.76	668.76					

\* \$481.15

\* \$291.70

\* \$332.50

\* \$243.43

\* \$535.13

That answer is incorrect.

Correct answer:

\$291.70

NPV(S) = \$243.43; IRR(S) = 23.38%.

NPV(L) = \$535.13; IRR(L) = 20.00%.

Value sacrificed: \$535.13 - \$243.43 = \$291.70.

-----

Simmons Shoes is considering a project with the following cash flows:

Time	Project Cash Flows (\$)
0	-700
1	400
2	-200
3	600
4	500

Simmons' WACC is 10 percent. What is the project's modified internal rate of return (MIRR)?

\* 28.93%

\* 17.10%

\* 18.26%

\* 29.52%

\* 25.28%

That answer is incorrect.

Correct answer:

18.26%

There are three steps to getting an MIRR:

1. Find PV of outflows:

$-\$700 + -\$200/(1.1)^2 = -\$865.2893.$

2. Find FV of inflows:

$\$400(1.1)^3 + \$600(1.1) + \$500 = \$1,692.40.$

3. Find MIRR:

N = 4

PV = -865.2893

PMT = 0

FV = 1,692.40

Solve for I = MIRR = 18.2593%.

-----

Consider the following information for Company XYZ:

Current Price of Stock \$35.00

Expected dividend in 1 Year \$1.20

Growth rate 7.2%

Beta 1.6

Risk Free Rate 4.5%

Expected Market Return 15%

Marginal Corporate Tax rate 34%

Bond Yield 12.34%

Calculate this company's cost of retained earnings using the Discounted Cash Flow (DCF) method.

\* 10.63%

\* 11.52%

\* 13.30%

\* 9.20%

\* 12.0%

\* 21.30%

That answer is correct!

The DCF method for estimating the cost of retained earnings states: Cost of Retained Earnings = (Dividend for period 1 / Current Price) + Growth Rate. In this case the estimated Cost of Retained Earnings =  $(1.2 / 35.00) + 7.2\% = 3.43 + 7.2 = 10.63\%$

-----

Sensitivity Analysis ignores:

\* the range of likely values that key variables can take.

\* changes in some of the key variables.

\* none of these answers.

\* effect on the IRR of changes in project variables.

That answer is correct!

One of the drawbacks of Sensitivity Analysis is that it ignores the range of likely values that key variables can take. This is rectified using Scenario Analysis.

-----

Which of the following statements is most correct?

\* Suppose Company A's EBIT is expected to experience a larger percentage change in response to a given percentage change in sales than Company B's EBIT. Other things held constant, Company A would appear to have more business risk than Company B.

\* All of these statements are false.

\* Suppose Company A's EPS is expected to experience a larger percentage change in response to a given percentage change in sales than Company B's EPS. Other things held constant, Company A would appear to have more business risk than Company B.

\* Suppose Company A's EPS is expected to experience a larger percentage change in response to a given percentage change in EBIT than Company B's EPS. Other things held constant, Company A would appear to have more business risk than Company B.

\* Suppose Company A's EPS is expected to experience a larger percentage change in response to a given percentage change in sales than Company B's EPS. Other things held constant, Company A would appear to have more financial risk than Company B.

That answer is correct!

Company A has a higher degree of operating leverage, and therefore provides more variation to projections of a firm's future returns on assets (its business risk).

-----

You have recently accepted a one-year employment term by a firm. The firm has given you the option of receiving your salary as a lump sum value of \$30,000 at the end of the year or as 12 monthly payments of \$2,400 starting one month after you start work. If your relevant discount rate is 2 percent per month, then which salary options would you prefer? (Ignore taxes, risk, and consumption needs.)

\* Monthly payments, since you do not have to wait so long to receive your money.

\* Monthly payments, since it has the larger present value.

\* The lump sum payment, since it has the larger present value.

\* Either one, since they have the same present value.

\* The lump sum payment, since it has the larger future value.

That answer is incorrect.

Correct answer:

Monthly payments, since it has the larger present value.

Monthly option PV =  $\$2,400(PVIFA(2\%, 12)) = \$2,400(10.5753) = \$25,380.72$ .

Annual option PV =  $\$30,000(PVIF(2\%, 12)) = \$30,000(0.7885) = \$23,655$ .

-----

Which of the following is most likely to encourage a company to use more debt in its capital structure?

\* All of these answers are correct.

\* An increase in unit production.

\* An increase in the corporate tax rate.

\* An increase in the company's degree of operating leverage.

\* An increase in the personal tax rate.

That answer is incorrect.

Correct answer:

An increase in the corporate tax rate.

A major reason for using debt is that interest is deductible, which lowers the effective cost of debt.

-----

A firm has a dividend growth rate of 2.8%. It typically pays out 48% of its earnings as dividends. Recently, it paid out \$2.4 per share dividend and the required rate of return on its stock is 13%. The firm's return on equity equals \_\_\_\_\_.

\* 5.83%

\* 5.38%

\* insufficient information

\* 12.19%

That answer is incorrect.

Correct answer:

5.38%

$g = ROE \times (1 - \text{dividend payout ratio})$ . Therefore,  $ROE = 0.028 / (1 - 0.48) = 5.38\%$ .

-----

Which of the following statements is most correct?

\* None of the statements are correct.

\* The discounted payback method solves all the problems associated with the payback method.

\* The NPV method is appealing to some managers because it produces a dollar amount upon which to base decisions rather than a IRR method.

\* All of the statements are correct.

\* For independent projects, the decision to accept or reject will always be the same using either the IRR method or the NPV method.

That answer is incorrect.

Correct answer:

For independent projects, the decision to accept or reject will always be the same using either the IRR method or the NPV method.

For mutually exclusive projects, a conflict can exist if the cost of capital is less than the crossover rate.

-----

Adams Audio is considering whether to make an investment in a new type of technology. Which of the following factors should the company consider when it decides whether to undertake the investment?

- \* None of these factors should be considered.
- \* The installation costs for the new equipment for the new technology are very high.
- \* The new technology will affect the cash flows produced by its other operations.
- \* If the investment is not made, then the company will be able to sell one of its laboratories for \$2 million.
- \* All of these factors should be considered.

That answer is incorrect.

Correct answer:

All of these factors should be considered.

These are all incremental cash flows which change the firm's total cash flow that occurs as a direct result of accepting the project, and should all be considered

-----

Which of the following statements about capital structure theory is most correct?

- \* In general, an increase in the corporate tax rate would cause firms to use less debt in their capital structures.
- \* Signaling theory suggests firms should in normal times maintain reserve-borrowing capacity which can be used if an especially good investment opportunity comes along.
- \* All of the statements are correct.
- \* None of the statements are correct.
- \* According to the "trade-off theory," a decrease in the costs of debt would lead firms to increase equity financing in their capital structures.

That answer is incorrect.

Correct answer:

Signaling theory suggests firms should in normal times maintain reserve-borrowing capacity which can be used if an especially good investment opportunity comes along.

An increase in the corporate tax rate reduces the after-tax cost of debt making it more attractive relative to equity. Thus, firms might be expected to use more debt. The trade-off theory of leverage states a firm trades off the benefits of debt financing (favorable corporate tax treatment) against the higher interest rates and bankruptcy costs.

-----

Moynihan Motors has a cost of capital of 10.25 percent. The firm has two normal projects of equal risk. Project A has an internal rate of return of 14 percent, while Project B has an internal rate of return of 12.25 percent. Which of the following statements is most correct?

- \* If the crossover rate (i.e., the rate at which the Project's NPV profiles intersect) is 8 percent, Project A will have a lower net present value than Project B.
- \* All of these answers are correct.
- \* If the projects are mutually exclusive, the firm should always select Project A.
- \* None of these answers are correct.
- \* Both projects have a positive net present value.



That answer is incorrect.

Correct answer:

Both projects have a positive net present value.

If the projects were independent, both should be accepted. They both have an IRR greater than the cost of capital, so they have positive NPVs. If the cost of capital were above 14%, both projects should be rejected. Project B will have a higher NPV at discount rates below 8% and Project A will have a higher NPV at discount rates above 8%.

-----

Empirical testing has confirmed the validity of which of the following dividend theories?

- \* Tax differential theory.
- \* Empirical testing has not produced any definitive results.
- \* Empirical testing has produced some evidence in support of each of these theories.
- \* Dividend irrelevance, or Modigliani-Miller, theory.
- \* Bird-in-the-hand theory.

That answer is incorrect.

Correct answer:

Empirical testing has produced some evidence in support of each of these theories.

These 3 theories have produced unclear empirical tests because of two reasons: 1. For a valid statistical test, things other than dividend policy must be held constant, and 2. We must be able to measure with a high degree of accuracy each sample firm's cost of equity. Neither of these two conditions holds.

-----

A firm's earnings break point equals \$98 million. Its net income is \$58 million and it is committed to a dividend payout ratio of 30%. Its after-tax cost of debt equals 9% and its shareholders demand an expected rate of return of 15%. The firm's WACC equals \_\_\_\_\_.

- \* 12.2%
- \* 9.8%
- \* 11.5
- \* 10.3%

That answer is incorrect.

Correct answer:

11.5

The retained earnings of the firm =  $\$58 \times 0.7 = \$40.6$  million. If the earnings breakpoint is \$98 million then the firm must issue  $\$(98 - 40.6) = \$57.4$  million in debt to maintain constant D/E ratio. This implies that the firm's D/E ratio equals  $57.4 / 40.6 = 1.41$ . Debt comprises  $57.4 / 98 = 58.57\%$  of the capital structure. Therefore,  $WACC = 0.5857 \times 0.09 + 0.4143 \times 15\% = 11.49\%$ .

-----

Assume a project has normal cash flows (that is, the initial cash flow is negative, and all other cash flows are positive). Which of the following statements is most correct?

- \* All else equal, a project's IRR increases as the cost of capital declines.
- \* All else equal, a project's NPV decreases as the cost of capital declines.
- \* All else equal, a project's NPV increases as the cost of capital declines.
- \* All else equal, a project's MIRR is unaffected by changes in the cost of capital.
- \* None of the answers are correct.

That answer is incorrect.

Correct answer:

All else equal, a project's NPV increases as the cost of capital declines.

Since the cost of capital is in the denominator of the NPV formula, the lower the cost of capital the higher the NPV. The more positive the NPV, the more cash the project is generating to service its debt and to provide the required return to shareholders.

-----

Conrad Corp. has an investment project with the following cash flows:

Time	Project Cash Flows
0	-\$1,000
1	200
2	-300
3	900
4	-700
5	600

The company's WACC is 12 percent. What is the project's modified internal rate of return (MIRR)?

- \* 5.68%
- \* 3.95%
- \* 6.83%
- \* 3.20%
- \* 2.63%

That answer is incorrect.

Correct answer:

3.95%

Find the present value of the outflows:

t = 0: -1,000

t = 2: N = 2, I = 12, PMT = 0, FV = 300, and solve for PV = -\$239.1582.

t = 4: N = 4, I = 12, PMT = 0, FV = 700, and solve for PV = -\$444.8627.

Total PV(Costs) = -\$1,000 - \$239.1582 - \$444.8627 = -\$1,684.0209.

Find the future value of the inflows:

t = 1: N = 4, I = 12, PV = -200, PMT = 0, and solve for FV = \$314.7039.

t = 3: N = 2, I = 12, PV = -900, PMT = 0, and solve for FV = \$1,128.96.

$t = 5: N = 0, I = 12, PV = -600, PMT = 0,$  and solve for  $FV = \$600$ .

Total  $FV(\text{Inflows}) = \$314.7039 + \$1,128.96 + \$600 = \$2,043.6639$ .

Then find the MIRR:

$N = 5$

$PV = -1,684.0209$

$PMT = 0$

$FV = 2,043.6639$

Solve for  $MIRR = I = 3.9471\%$ .

-----

The management of Olively.com, an online research network, are considering becoming a public company. At a lengthy meeting with the board of directors, the CEO of Olively.com details his idea as to methods in which the firm should raise capital. In his discussion, the CEO states that "45% of new capital should come from debt, leaving 55% to come from the issuance of common equity. We will disregard issuing preferred stock at this point." In the simplistic sense, the CEO of Olively.com is detailing which of the following?

- \* Optimal capital structure
- \* Target capital structure
- \* Target asset base
- \* Capital asset base
- \* Optimal asset base

That answer is incorrect.

Correct answer:

Target capital structure

In this example, the CEO of Olively.com is detailing his idea of the company's target capital structure. The target capital structure can best be thought of as the proportion of debt, common stock, and preferred stock that the firm plans to issue in its effort to raise capital. The "optimal capital structure" is defined as the capital structure that balances risk and return, thereby maximizing the firm's stock price.

-----

The corporate finance division of Intelligent Semiconductor is examining the firm's recent sales in an attempt to forecast future operating performance. In their investigation, the management of the firm's corporate finance division have identified the following sales and EBIT information for the previous two years:

Sales in year 1 \$1,200,000

Sales in year 2 \$1,500,000

EBIT in year 1 \$400,000

EBIT in year 2 \$550,000

Given this information, what is the degree of operating leverage for Intelligent Semiconductor for this period?

- \* .350
- \* 1.25
- \* .3667
- \* .3333
- \* 1.50

That answer is incorrect.

Correct answer:

1.50

To calculate the degree of operating leverage (DOL), use the following equation:  $\{\% \text{ change in EBIT} / \% \text{ change in sales}\}$ . Incorporating the given information into this equation yields the following:  $\{[(\text{year 2 EBIT } \$550,000 - \text{year 1 EBIT } \$400,000) / \text{year 1 EBIT } \$400,000] / [(\text{year 2 sales } \$1,500,000 - \text{year 1 sales } \$1,200,000) / \text{year 1 sales } \$1,200,000]\} = 1.50$

-----

Which of the following is/are true?

- I. Discounted payback period and simple payback period can produce conflicting project rankings.
- II. Independent projects are mutually exclusive.
- III. The payback period rule ignores cash flows beyond the payback period.

- \* I, II & III
- \* II only
- \* I & III
- \* I & II
- \* I only
- \* II & III
- \* III only

That answer is incorrect.

Correct answer:

I & III

Independent projects are ones whose cash flows are not dependent on each other while mutually exclusive projects are those which cannot be undertaken simultaneously. It is not necessary for independent projects to be mutually exclusive or vice versa.

-----

Which of the following types of risk measures the variability of an asset's expected returns, assuming that the asset is not the only asset of the company in question while at the same time not taking into consideration the effects of shareholder diversification? Choose the best answer

- \* Beta coefficient
- \* Unsystematic risk
- \* Market risk
- \* More than one of these answers is correct

- \* Corporate risk
- \* Alpha risk

That answer is incorrect.

Correct answer:

Corporate risk

Corporate risk is defined as the variability of an assets expected returns without taking into consideration the effects of shareholder diversification. This is one step away from Stand-alone Risk, which measures the risk of an asset not only without taking into consideration the effect of shareholder diversification, but of Company diversification as well. Stand-alone risk assumes that the asset in question is the only asset of the firm and that the securities of the firm are the only assets in investors' portfolios. Corporate risk takes into consideration that firms will diversify their asset bases.

-----

Which of the following equations illustrates the best calculation of the after-tax cost of new debt issuances?

- \* Marginal cost of new long-term debt \* (1-combined state/federal tax rate)
- \* Marginal rate of return on new long-term debt \* (1-combined state/federal tax rate)
- \* Current yield on outstanding short-term debt \* (1-tax rate)
- \* Marginal cost of new long-term debt \* (1-federal tax rate)
- \* Required rate of return on outstanding long-term debt \* (1-tax rate)
- \* Annual coupon rate on outstanding long-term debt \* (1 + tax rate)

That answer is correct!

When calculating the after-tax cost of new debt issuances, the financial analyst needs to determine two things: the marginal cost of debt, and the combined state/federal tax rate. When calculating the marginal cost of debt, several approaches can be used, including the YTM or YTC on outstanding senior long-term debt issues, the annual coupon rate of outstanding debt if issued at par, or the YTM of the debt of similar firms. The required return to investors is not equal to the company's cost of debt because interest payments are deductible and the government in effect pays part of the total cost. So said, the after-tax cost of debt will nearly always be lower than the investor's required rate of return for debt. Of the six choices listed, only #5 represents a commonly recognized financial equation, and this is the calculation of the after-tax cost of debt. The remaining choices are largely fictitious.

-----

Which of the following factors affect(s) a firm's optimal pay-out ratio?

- The availability and cost of external capital.
- The investment opportunities available.
- The firm's target debt-to-equity ratio.
- Investors' preference for dividends versus capital gains.

- \* II only
- \* I only
- \* I, II, III & IV
- \* IV only

- \* I, II & III
- \* I & III
- \* III only
- \* III & IV

That answer is incorrect.

Correct answer:

I, II, III & IV

A firm must consider all of these factors while determining what fraction of the earnings it should pay out. It should be noted that another factor that must be considered is the capability of keeping the dividends stable over time.

-----

A company is considering a project with the following cash flows:

Time	Cash flow
0	-\$100,000
1	50,000
2	50,000
3	50,000
4	-10,000

The project's cost of capital is estimated to be 10 percent. What is the modified internal rate of return (MIRR)?

- \* 11.25%
- \* 20.34%
- \* 14.25%
- \* 11.56%
- \* 13.28%

That answer is incorrect.

Correct answer:

14.25%

First, calculate the present value of costs:

$N = 4$ ,  $I/YR = 10$ ,  $PMT = 0$ ,  $FV = -10,000$ , and solve for  $PV = -\$6,830.13$ .

Add  $-\$100,000 + -6,830.13 = -\$106,830.13$ .

Then, find the terminal value of inflows:

Shift to BEGIN MODE,  $N = 3$ ,  $I/YR = 10$ ,  $PV = 0$ ,  $PMT = -50,000$ , and solve for  $FV = \$182,050$ .

Finally, shift back to END mode, and solve for MIRR, where  $N = 4$ ,  $PV = -\$106,830$ ,  $PMT = 0$ ,  $FV = 182,050$ , and solve for  $I/YR = 14.25\%$ .

-----

An entrepreneur has invested \$2.2 million in project A with an NPV of \$245,000 and an estimated beta of 0.59. She has invested another \$3.7 million in project B with an NPV of \$320,000 and an estimated beta

of 1.23. The firm's estimated beta equals \_\_\_\_\_.

- \* 1.11
- \* 0.72
- \* 1.23
- \* 0.99

That answer is incorrect.

Correct answer:

0.99

The market value of project A equals \$2.2 million + \$245,000 = \$2.445 million.

The market value of project B equals \$3.7 million + \$320,000 = \$4.02 million.

The firm can be considered a portfolio of 2 projects. The beta of a portfolio equals the weighted average of the betas of the individual components. The weight of a component equals the fraction of the market value it comprises. Therefore, the firm's market value equals  $2.445 + 4.02 = \$6.465$  million and its beta equals  $2.445/6.465 * 0.59 + 4.02/6.465 * 1.23 = 0.99$ .

-----

Consider the following information:

Borrowing Rate 10%

Marginal Tax Rate 40%

Preferred Stock Par Price \$100

Preferred Dividend \$10

Preferred Stock floatation cost 2.5%

Cost of common equity 12.0%

Preferred Stock issued at Par

The Optimal Capital Structure is 40% debt, 50% common equity, and 10% preferred stock.

Credit Rating BB+

What is the firm's Weighted Average Cost of Capital (WACC)?

- \* 12.62%
- \* 7.42%
- \* 9.0%
- \* 8.0%
- \* 2.5%
- \* 9.42%

That answer is incorrect.

Correct answer:

9.42%

The firm's Weighted Average Cost of Capital (WACC) is a weighted average of the component cost of capital. In this case  $10\%(\text{borrowing rate}) \times (1 - .4)\text{Tax savings} = 6\%$  is the component cost of debt.  $\$10$  (preferred dividend) /  $97.5$  (Par minus floatation cost) =  $10.25\%$  is the component cost of preferred stock. Thus the WACC =  $.4(6\%) + .5(12\%) + .1(10.25\%) = 9.42\%$

-----

Which of the following statements is most correct?

- \* None of these statements are correct.
- \* If a firm finds that the cost of debt financing is currently less than the cost of equity financing, an increase in its debt ratio will always reduce its cost of capital.
- \* A firm can use retained earnings without paying a flotation cost. Therefore, while the cost of retained earnings is not zero, the cost of retained earnings is generally lower than the after-tax cost of debt financing.
- \* The capital structure which minimizes the firm's cost of capital is also the capital structure which maximizes the firm's stock price.
- \* The capital structure which minimizes the firm's cost of capital is also the capital structure which maximizes the firm's earnings per share.

That answer is incorrect.

Correct answer:

The capital structure which minimizes the firm's cost of capital is also the capital structure which maximizes the firm's stock price.

The optimal capital structure is the one that maximizes the price of the firm's stock, and this generally calls for a debt ratio which is lower than the one that maximized expected EPS.

-----

J. Ross and Sons Inc. has a target capital structure that calls for 40 percent debt, 10 percent preferred stock, and 50 percent common equity. The firm's current after-tax cost of debt is 6 percent, and it can sell as much debt as it wishes at this rate. The firm's preferred stock currently sells for \$90 a share and pays a dividend of \$10 per share; however, the firm will net only \$80 per share from the sale of new preferred stock. Ross expects to retain \$15,000 in earnings over the next year. Ross' common stock currently sells for \$40 per share, but the firm will net only \$34 per share from the sale of new common stock. The firm recently paid a dividend of \$2 per share on its common stock, and investors expect the dividend to grow indefinitely at a constant rate of 10 percent per year.

What is the firm's cost of retained earnings?

- \* 15.5%
- \* 12.5%
- \* 10.0%
- \* 18.0%
- \* 16.5%

That answer is correct!

$k(s) = \$2.20/\$40 + 0.10 = 15.5\%$ .

-----

In applying the CAPM (Capital Asset Pricing Model) to estimate the cost of equity capital, which of the following elements is not subject to dispute or controversy?

- \* Expected rate of return on the market.



- \* All of these answers are subject to dispute.
- \* The stock's beta coefficient.
- \* Market risk premium.
- \* Risk-free rate.

That answer is incorrect.

Correct answer:

All of these answers are subject to dispute.

Under the CAPM approach, it is difficult at best, to obtain correct estimates of the inputs required to make it operational:

1. there is controversy about whether to use long-term or short-term Treasury yields for the risk-free rate.
2. it is difficult to estimate the beta that investors expect to firm to have in the future, and it is difficult to estimate the market risk premium.

-----

Flavortech Inc. expects EBIT of \$2,000,000 for the coming year. The firm's capital structure consists of 40 percent debt and 60 percent equity, and its marginal tax rate is 40 percent. The cost of equity is 14 percent, and the company pays a 10 percent rate on its \$5,000,000 of long-term debt. One million shares of common stock are outstanding. In its next capital budgeting cycle, the firm expects to fund one large positive NPV project costing \$1,200,000, and it will fund this project in accordance with its target capital structure. If the firm follows a residual dividend policy and has no other projects, what is its expected dividend payout ratio?

- \* 0%
- \* 40%
- \* 60%
- \* 100%
- \* 20%

That answer is incorrect.

Correct answer:

20%

EBIT	\$2,000,000
- I	500,000 (\$5,000,000 debt x 10% coupon)
EBT	1,500,000
- Taxes	600,000 (\$1,500,000 EBT x 40% tax rate)
NI	900,000

Project funding \$1,200,000 project funded:  
 Residual earnings 0.60 equity = \$720,000  
 0.40 debt = \$480,000  
 Payable as dividends: 900,000 - 720,000 = \$180,000  
 Dividend payout ratio = \$180,000/\$900,000 = 20%.

-----

Which of the following equations correctly illustrates the calculation of the cost of equity using the Capital Asset Pricing Model?

- \* Risk-free rate of return + beta(expected return on the market - risk-free rate of return)
- \* None of these examples
- \* Risk-free rate of return + alpha(expected return on the market - risk-free rate of return)
- \* Beta(risk-free rate of return + beta(expected return on the market - risk-free rate of return))
- \* Risk-free rate of return \* beta(expected return on the market - risk-free rate of return)
- \* Annual dividend/current stock price \* (1-tax rate)

That answer is correct!

The Capital Asset Pricing Model is an important and widely used tool within the field of finance, and it is imperative for the CFA candidate to have a fundamental understanding of both the methodology and the applications of this approach. Of the six choices listed, only 1 represents a recognized financial equation, and this is the CAPM. The other choices are largely fictitious.

-----

Myron Gordon and John Lintner believe that the required return on equity increases as the dividend payout ratio is decreased. Their argument is based on the assumption that

- \* investors require that the dividend yield and capital gains yield equal a constant.
- \* investors are indifferent between dividends and capital gains.
- \* investors value a dollar of expected capital gains more highly than a dollar of expected dividends because of the lower tax rate on capital gains.
- \* investors view dividends as being less risky than potential future capital gains.
- \* capital gains are taxed at a higher rate than dividends.

That answer is incorrect.

Correct answer:

investors view dividends as being less risky than potential future capital gains.

The main conclusion of MM's irrelevance theory is that dividend policy does not affect the required rate of return on equity. Gordon-Lintner disagreed stating that  $k(s)$  decreases as the dividend payout is increased because investors are less certain of receiving the capital gains which should result from retaining earnings than they are of receiving dividends. They said that investors value expected dividends more highly than expected capital gains because the dividend yield is less risky than the growth component in the total expected return equation,  $k(s) = D1/P_0 + g$ .

-----

Zippy Pasta Corporation (ZPC) has a constant growth rate of 7 percent. The company retains 30 percent of its earnings to fund future growth. ZPC's expected EPS and  $k(s)$  for various capital structures are given below. What is the optimal capital structure for ZPC?

Debt/Assets	Expected EPS (\$)	$k(s)$
20%	2.50	15.0%
30	3.00	15.5
40	3.25	16.0
50	3.75	17.0

70

4.00

18.0

- \* Debt/Total Assets = 20%
- \* Debt/Total Assets = 30%
- \* Debt/Total Assets = 70%
- \* Debt/Total Assets = 40%
- \* Debt/Total Assets = 50%

That answer is incorrect.

Correct answer:

Debt/Total Assets = 50%

The optimal capital structure maximizes the firm's stock price. When the debt ratio is 20%, expected EPS is \$2.50. Given the firm's policy of retaining 30% of earnings, the expected dividend per share D1 is  $\$2.50 \times 0.70 = \$1.75$ . The stock price  $P_0$  is  $\$1.75 / (15\% - 7\%)$  or \$21.88. When the debt ratio is 30%, expected EPS is \$3.00 and expected D1 is  $\$3.00 \times 0.70 = \$2.10$ . The stock price  $P_0$  is  $\$2.10 / (15.5\% - 7\%) = \$24.71$ . Similarly, when the debt ratio is 40%,  $D1 = \$2.275$  and  $P_0 = \$25.28$ . When the debt ratio is 50%,  $D1 = \$2.625$  and  $P_0 = \$26.25$ . When the debt ratio is 70%,  $D1 = \$2.80$  and  $P_0 = \$25.45$ . The stock price is highest when the debt ratio is 50%.

-----

A portfolio manager with Mally, Feasance, & Company is examining shares of Allcycles.com. Assume the following information:

Annual Dividend: \$0.45  
EPS: \$2.15  
Tax Rate: 35%  
Discount Rate: 12.25%  
ROE: 18%

Using this information, and assuming that ROE is expected to remain stable, what is the dividend growth rate for Clay Industries?

- \* 14.64%
- \* 15.51%
- \* 3.77%
- \* 12.67%
- \* The answer cannot be determined from the information provided.
- \* 14.23%

That answer is incorrect.

Correct answer:

14.23%

To calculate the growth rate, use the following equation:

$\{g = ROE(1 - \text{Dividend Payout Ratio})\}$ .

While the ROE figure has been provided, the Dividend Payout Ratio must be calculated manually. To find the Dividend Payout Ratio, divide the annual dividend by the EPS figure, giving the following:

$\{\text{Dividend Payout Ratio} = (\$0.45 / \$2.15)\}$

From this equation, we determine that the Dividend Payout Ratio for this firm is 20.93%. Inputting this figure into the growth rate equation will yield a dividend growth rate of 14.23% for this firm.

As you can see, tax rates and discount rates are not factored into the calculation.

-----

Which of the following statements is correct?

- \* Due to the way the MCC (Marginal Cost of Capital) is constructed, the first break point in the MCC schedule must be associated with using up all available retained earnings and having to issue common stock.
- \* Normally, the cost of external equity raised by issuing new common stock is above the cost of retained earnings. Moreover, the higher the growth rate is relative to the dividend yield, the more the cost of external equity will exceed the cost of retained earnings.
- \* The lower a company's tax rate, the greater the advantage of using debt in terms of lowering its WACC.
- \* Because we often need to make comparisons among firms that are in different income tax brackets, it is best to calculate the WACC (Weighted Average Cost of Capital) on a before-tax basis.
- \* If a firm has been suffering accounting losses and is expected to continue suffering such losses, and therefore its tax rate is zero. It is possible that its after-tax component cost of preferred stock as used to calculate the WACC will be less than its after-tax component cost of debt.

That answer is incorrect.

Correct answer:

If a firm has been suffering accounting losses and is expected to continue suffering such losses, and therefore its tax rate is zero. It is possible that its after-tax component cost of preferred stock as used to calculate the WACC will be less than its after-tax component cost of debt.

Because corporations can exclude dividends for tax purposes, preferred stock often has a market return that is less than the issuing company's cost of debt. Then, if the issuer's tax rate is zero, its component cost of preferred would be less than its cost of debt.

-----

A financial analyst with Smith, Kleen, & Beetchnutty is examining shares of Clay Industries for possible investment. Assume the following information:

EPS: \$4.19  
ROE: 11.25%  
Growth rate of dividends: 6.75%  
Discount rate: 11.50%  
Tax Rate 35%

Using this information, what is the dividend payout ratio for Clay Industries? Further, what is the annual dividend?

- \* 35.87%, \$1.50
- \* 60.00%, \$2.51
- \* 60.00%, \$1.68
- \* The answer cannot be determined from the information provided.
- \* 40.00%, \$1.68

\* 40.00%, \$2.51

That answer is incorrect.

Correct answer:

40.00%, \$1.68

To determine the dividend payout ratio, the equation used to determine the growth rate of dividends must be manipulated. This equation is originally structured as follows:

$$g = \text{ROE} (1 - \text{Dividend Payout Ratio})$$

In order to determine the Dividend Payout Ratio, the equation must be rearranged to the following:

$$(1 - \text{Dividend Payout Ratio}) = \text{Growth Rate of Dividends} / \text{ROE}$$

Imputing the given information into this equation will yield:

$$(1 - \text{Dividend Payout Ratio}) = 0.0675 / 0.1125 = 0.60$$

Finally, subtracting this answer from 1 will yield the answer of 40%. We must subtract the first answer from one because the first answer represents the retention rate, i.e. the percentage of earnings that is retained and reinvested at the firm's ROE, and not the Dividend Payout Ratio. The retention rate and the payout ratio will always combine to equal positive one.

In order to determine the annual dividend, take the Dividend Payout Ratio, which was found to be 40%, and multiply this figure by the Earnings Per Share calculation, which is given as \$4.19. This will yield an annual dividend of \$1.676.

As you can see, neither the discount rate nor the tax rate is factored into the equation

-----

Using the Security Market Line concept in capital budgeting, which of the following is correct?

- \* If two mutually exclusive projects' expected returns are both above the SML, the project with the lower risk should be accepted.
- \* If a project's expected rate of return is greater than the expected rate of return on an average project, it should be accepted.
- \* If a project's return lies below the SML, it should be rejected if it has a beta greater than the firm's existing beta but accepted if its beta is below the firm's beta.
- \* If the expected rate of return on a given capital project lies above the SML, the project should be accepted even if its beta is above the beta of the firm's average project.

That answer is incorrect.

Correct answer:

If the expected rate of return on a given capital project lies above the SML, the project should be accepted even if its beta is above the beta of the firm's average project.

If the expected rate of return on a given capital project lies above the SML, the expected rate of return on the project is more than enough to compensate for its risk, and the project should be accepted. Conversely, if the project's rate of return lies below the SML, it should be rejected.

-----

Bouchard Company's stock sells for \$20 per share, its last dividend was \$1.00. Its growth rate is a constant 6 percent, and the company would incur a flotation cost of 20 percent if it sold new common stock. Retained earnings for the coming year are expected to be \$1,000,000, and the amount of common equity in the capital structure is 60 percent. If Bouchard has a capital budget of \$2,000,000, what component cost of common equity will be built into the WACC for the last dollar of capital the company raises?

- \* 12.15%
- \* 11.80%
- \* 11.30%
- \* 11.45%
- \* 12.63%

That answer is incorrect.

Correct answer:

12.63%

$BP(RE) = RE/Equity\ fraction = \$1,000,000/0.6 = \$1,666,667.$

Since the capital budget will be \$2 million, and since all equity in the WACC (Weighted Average Cost of Capital) beyond \$1,666,667 will be external equity, the WACC of the last dollar raised will include equity at a cost of  $k(e)$  (component cost of external equity obtained by issuing new common stock as opposed to retaining earnings):

$k(e) = \$1(1.06)/\$20(1 - 0.2) + 0.06 = 0.0663 + 0.06 = 0.1263 = 12.63\%.$

-----

A company is analyzing two mutually exclusive projects, S and L, whose cash flows are shown below:

Years	0	1	2	3	4
S	-1,100	900	350	50	10
L	-1,100	0	300	500	850

The company's cost of capital is 12 percent, and it can get an unlimited amount of capital at that cost. What is the regular IRR (not MIRR) of the better project?

- \* 12.00%
- \* 13.09%
- \* 17.46%
- \* 12.53%
- \* 13.88%

That answer is incorrect.

Correct answer:

13.09%

Time line:

	0	1	2	3	4 Years
Cash flows S	-1,100	900	350	50	10
NPV(S) = ?					IRR(S) = ?
Cash flows L	-1,100	0	300	500	850
NPV(L) = ?					IRR(L) = ?

Financial calculator solution:

Calculate the NPV and IRR of each project then select the IRR of the higher NPV project

Project S; Inputs: CF(0) = -1,100; CF(1) = 900; CF(2) = 350; CF(3) = 50; CF(4) = 10;  
I = 12

Output: NPV(S) = 24.53; IRR(S) = 13.88%.

Project L; Inputs: CF(0) = -1,100; CF(1) = 0; CF(2) = 300; CF(3) = 500; CF(4) = 850;  
I = 12

Output: NPV(L) = 35.24; IRR(L) = 13.09%.

Project L has the higher NPV and its IRR = 13.09%.

-----

The market risk of a project is measured by:

- \* the project's impact on the systematic risk of the firm's stock.
- \* the variability of the project's projected returns.
- \* the project's impact on the uncertainty about the firm's future earnings.
- \* the project's impact on the unsystematic risk of the firm's stock.

That answer is correct!

Remember that it is the systematic risk that you must worry about.

-----

Pickles Corp. is a company which sells bottled iced tea. The company is thinking about expanding its operations into the bottled lemonade business. Which of the following factors should the company incorporate into its capital budgeting decision as it decides whether or not to enter the lemonade business?

- \* All of the statements are correct.
- \* If the company doesn't produce lemonade, it can lease the building to another company and receive after-tax cash flows of \$500,000 a year.
- \* The company will spend \$3 million to renovate a building for the proposed project.
- \* If the company enters the lemonade business, its iced tea sales are expected to fall 5 percent as some consumers switch from iced tea to lemonade.
- \* None of the statements are correct.

That answer is correct!

These are all incremental cash flows and should be considered.

-----

Which of the following is an implication of the signaling theory of capital structure?

- \* none of these answers.
- \* A firm will try to raise debt capital when the project's returns are not considered to be very high.
- \* A firm will try to raise equity capital when the project's returns are deemed very favorable.
- \* The higher the bankruptcy costs, the lower is the debt ratio utilized by a firm.

That answer is correct!

According to the signaling theory of capital structure, a firm will try to raise debt capital when the project's returns are deemed very favorable and vice versa. It does not use the concept of bankruptcy costs as done by the trade-off theory.

-----

Which of the following statements is most correct?

- \* Beta measures market risk, but if a firm's stockholders are not well diversified, beta may not accurately measure the firm's stand-alone risk.
- \* If the calculated beta underestimates the firm's true investment risk, then the CAPM (Capital Asset Pricing Model) method will overestimate  $k(s)$  (component cost of retained earnings or internal equity).
- \* The discounted cash flow method of estimating the cost of equity can be used if the growth component,  $g$ , is varies greatly during the analysis period.
- \* An advantage shared by both the DCF (Discounted Cash Flow) and CAPM methods of estimating the cost of equity capital, is that they yield precise estimates and require little or no judgment.
- \* All of these statements are false.

That answer is correct!

If a firm's stockholders are not well diversified, they may be concerned with stand-alone risk rather than just market risk and the firm's true investment risk would not be measured by its beta, and the CAPM procedure would understate the correct value of the cost of equity capital.

-----

Which of the following projects is likely to have multiple Internal Rates of Return?

Project A  
Initial investment outlay: (\$1,000,000)  
t1: \$400,000  
t2: \$100  
t3: \$1,000,000  
t4: \$1,000,000



t5: \$100  
t6: \$0.00

Project B  
Initial investment outlay: (\$1,000,000)  
t1: \$40,000  
t2: \$90,000  
t3: \$590,000  
t4: (\$105,000)  
t5: (\$10,000)  
t6: \$900,000

Project C  
Initial investment outlay: (\$500,000)  
t1: \$100,000  
t2: \$100,000  
t3: \$100,000  
t4: \$100,000  
t5: \$0.00  
t6: \$500,000

Project D  
Initial investment outlay: (\$500,000)  
t1: \$105,000  
t2: (\$40,000)  
t3: \$45,000  
t4: \$400,000  
t5: \$400,000  
t6: \$65,000

- \* None of these answers
- \* Both Project B and D likely to have multiple IRRs
- \* Project C
- \* Project D
- \* Project B
- \* Project A

That answer is incorrect.

Correct answer:

Both Project B and D likely to have multiple IRRs

In evaluating projects with "non-normal cash flows" the Internal Rate of Return method will often produce multiple IRRs which leads to an incorrect accept/reject decision. Non-normal cash flows are defined as cash flows in which the sign changes more than once. Projects B and D involve cash outflows superimposed within the cash inflows, resulting in a sign change from positive to negative and negative to positive. In examining projects such as this, it is advisable to use either the NPV or MIRR methods.

From observation alone, we can determine that project B and D are non-normal projects, and are thus likely to result in multiple IRR calculations. While projects A and C do involve periods of zero cash flow, this will not interfere with the IRR calculation to the extent of producing multiple IRRs.

-----

Your company's stock sells for \$50 per share, its last dividend was \$2.00, its growth rate is a constant 5

percent, and the company would incur a flotation cost of 15 percent if it sold new common stock. Net income for the coming year is expected to be \$500,000, the firm's payout ratio is 60 percent, and its common equity ratio is 30 percent. If the firm has a capital budget of \$1,000,000, what component cost of common equity will be built into the WACC for the last dollar of capital the company raises?

- \* 12.30%
- \* 11.75%
- \* 10.50%
- \* 9.94%
- \* 9.20%

That answer is incorrect.

Correct answer:

9.94%

$$BP(RE) = RE/Equity\ fraction = \$500,000(0.4)/0.3 = \$666,667.$$

BP = break point; RE = retained earnings

Since the capital budget will be \$1 million, and since all equity in the WACC beyond \$666,667 will be external equity, the WACC of the last dollar raised will include equity at a cost of k(e):

$$k(e) = \$2(1.05)/\$50(1 - 0.15) + .05 = 9.94\%.$$

-----

Consider the following characteristics of firm XYZ:

Stock price \$50

Annual dividend \$2

Debt rate 10%

Equity flotation cost 7%

Tax rate 40%

Preferred Stock Par value \$100

What is the firm's after tax cost of debt?

- \* 60%
- \* 4.3%
- \* 10%
- \* 40%
- \* 6%
- \* 4%
- \* 5%

That answer is incorrect.

Correct answer:

6%

A firm's after tax cost of debt may be calculated using the following formula: After Tax Cost of Debt = Cost of Debt x (1 - Tax Rate). In this case the After Tax Cost of Debt = 10% x (1 - 40%) = 10% x 60% = 6%.

-----

The Oneonta Chemical Company is evaluating two mutually exclusive pollution control systems. Since the company's revenue stream will not be affected by the choice of control systems, the projects are being evaluated by finding the PV of each set of costs. The firm's required rate of return is 13 percent, and it adds or subtracts 3 percentage points to adjust for project risk differences. System A is judged to be a high-risk project (it might end up costing much more to operate than is expected).

System A's risk-adjusted cost of capital is

\* 16 percent; since A is more risky, its cash flows should be discounted at a higher rate, because this correctly penalizes the project for its high risk.

\* indeterminate, or, more accurately, irrelevant, because for such projects we would simply select the process that meets the requirements with the lowest required investment.

\* 13 percent; the firm's cost of capital should not be adjusted when evaluating outflow only projects.

\* somewhere between 10 percent and 16 percent, with the answer depending on the riskiness of the relevant inflows.

\* 10 percent; this might seem illogical at first, but it correctly adjusts for risk where outflows, rather than inflows, are being discounted.

That answer is incorrect.

Correct answer:

10 percent; this might seem illogical at first, but it correctly adjusts for risk where outflows, rather than inflows, are being discounted.

$k(A) = 13\% - 3\% = 10\%$ .

If the cash flows are cost only outflows, and the analyst wants to correctly reflect their risk, the discount rate should be adjusted downward (in this case by subtracting 3 percentage points) to make the discounted flows comparatively larger.

-----

Two projects being considered are mutually exclusive and have the following projected cash flows:

Year	Project A	Project B
0	-\$50,000	-\$50,000
1	15,990	0
2	15,990	0
3	15,990	0
4	15,990	0
5	15,990	100,560

At what rate (approximately) do the NPV profiles of Projects A and B cross?

\* The NPV profiles of these two projects do not cross.

\* 11.5%

\* 6.5%

\* 16.5%

\* 20.0%

That answer is incorrect.

Correct answer:

11.5%

Solve for numerical PVIFA and PVIF and obtain corresponding interest rates from table.

$$\begin{aligned}\text{Project A: } & 50,000 = 15,990(\text{PVIFA}(\text{Irr},5)) \\ & 3.12695 = \text{PVIFA}(\text{IrrA},5) \\ & \text{IRR(A)} = 18\%\end{aligned}$$

$$\begin{aligned}\text{Project B: } & 50,000 = 100,560(\text{PVIF}(\text{IrrB},5)) \\ & 0.49722 = \text{PVIF}(\text{IrrB},5) \\ & \text{IRR(B)} = 15\%\end{aligned}$$

Solving for the crossover rate of 11.49% requires interpolation, which is not covered in the text. However, by using trial and error and an NPV profile drawing, the student can select the correct multiple choice answer, 11.5%. Drawing an NPV profile drawing using the calculated IRRs, and the NPVs at  $k = 0\%$ , shows that there is a crossover rate. Of the responses listed in the problem, 16.5% and 20.0% are clearly too high, since the IRR(B) is 15%. At  $k = 6.5\%$  the NPVs are not equal, thus 11.5% must be the correct response.

-----

Intelligent Semiconductor is considering the development of a new data storage medium, which will allow tremendous increases in the efficiency of its customer's high-end server lines. The development of the new system will take place in Intelligent's existing facilities, and the storage costs for the additional equipment are expected to be residual in nature. The following information applies to this project:

Rent expense for existing facilities (\$10,500)

Initial cash outlay (\$50,000)

t1: \$15,000  
t2: \$11,000  
t3: \$11,000  
t4: \$15,000  
t5: \$25,000

Discount rate: 9%

Assuming no taxes or related charges, that the initial cash outlay does not include any sunk costs, and a \$0.00 salvage value at after the fifth year, which of the following choices best represents the payback period for this investment?

- \* 4 years
- \* 3.75 years
- \* 3.13 years
- \* 3.87 years
- \* 4.23 years

That answer is incorrect.

Correct answer:

3.87 years

Remember that the rental expense of the firm's existing facilities is a sunk cost, and should not be incorporated into the calculation. This is due to the fact that the rental expense is not incremental in nature, and is unaffected by the acceptance of the project in question. In this example, the payback period

is approximately 3.87 years. After the third year, \$37,000 of the initial \$50,000 investment has been recouped, leaving \$13,000 to be recovered. The following period has a cash inflow of \$15,000, exceeding the \$13,000 amount required to completely "pay back" the initial investment. To calculate the period required, divide the \$13,000 left to be recouped by the \$15,000 cash inflow during period 4. This will yield an answer of 0.8667, which is added to the three-year period already passed, giving an answer of 3.87 years. While somewhat appealing in a simplistic sense, the payback period is not an advisable method for valuation and analysis of capital projects, primarily due to the fact that this method completely ignores the time value of money principle which governs the field of finance.

-----

The management of Microscam International is considering the creation of a new distribution facility. Assume the following information:

Initial investment outlay: (\$10,000,000)

t1: \$2,500,000  
t2: \$2,500,000  
t3: \$5,000,000  
t4: \$5,000,000  
t5: \$5,000,000  
t6: (\$2,000,000)  
t7: (\$200,000)  
t8: \$5,000,000

Using this information, and assuming a 12.5% cost of capital, what is the Modified Internal Rate of Return for this project?

- \* None of these answers
- \* 13.88%
- \* 12.81%
- \* 30.06%
- \* 16.97%
- \* 15.44%

That answer is correct!

Remember that the Modified Internal Rate of Return escapes many of the pitfalls associated with the traditional Internal Rate of Return calculation. One such pitfall is the fact that the traditional IRR cannot produce reliable calculations for "non-normal" projects, such as the project illustrated in this example. The Modified Internal Rate of Return, however, escapes this basic flaw and can be used to evaluate virtually any project.

The calculation of the answer in this equation is as follows:

Step 1:

Determine the Future Value of the cash inflows by compounding each positive inflow by the cost of capital. This value is often referred to as the "Terminal Value."

Step 2:

Determine the Present Value of the cash outflows by discounting each negative inflow by the cost of capital. The cash inflows to be discounted occur in periods 6 and 7.

Step 3:

Determine the rate that equates the PV of the cash outflows to the FV of the cash inflows.

The calculation of the FV of the cash inflows is shown as follows:

$$\text{FV of the cash inflows} = \{[\$2,500,000 * 2.281] + [\$2,500,000 * 2.027] + [\$5,000,000 * 1.802] + [\$5,000,000 * 1.602] + [\$5,000,000 * 1.424] + [\$5,000,000 * 1]\} = \$39,910,000.$$

This is the terminal value.

The calculation of the PV of the cash outflows is calculated as follows:

$$\text{PV of the cash outflows} = \{-10,000,000\} - [2,000,000 / 2.027] - [\$200,000 / 2.281] = (\$11,074,360)$$

Now that the present and future (terminal) values of the cash flows have been determined, the Modified Internal Rate of Return can take place. The following values are imputed into the Present Value worksheet on your calculator:

$$\text{PV} = (\$11,074,360), \text{FV} = \$39,910,000, \text{N} = 8, \text{PMT} = \$0.00, \text{Compute I.}$$

Imputing these values will yield an answer of 17.38% for the Modified Internal Rate of Return.

-----

A financial analyst with Mally, Feasance & Company is examining shares of Microscam International. Assume the following information:

Retention Rate: 72%  
EPS: \$2.16  
Growth Rate: 21%  
Discount Rate: 14.50%  
Tax Rate: 35%

Using this information, what is the ROE for Microscam International?

- \* 5.88%
- \* 15.12%
- \* 56.88%
- \* 33.40%
- \* The answer cannot be calculated from the information provided.
- \* 29.17%

That answer is incorrect.

Correct answer:  
29.17%

To determine the ROE for Intelligent, the equation used to determine the dividend growth rate must be manipulated. The dividend growth rate equation to be used is originally structured as follows:

$$\{g = \text{ROE}(1 - \text{Dividend Payout Ratio})\}.$$

The original equation must be rearranged using algebra, and will yield the following:  $\{\text{ROE} = g / \text{Retention Rate of Dividends}\}$ . Imputing the given information into this equation will yield the following:

$$\{\text{ROE} = 0.21 / 0.72\}.$$

Solving for ROE will yield a figure of 29.17%.

As you can see, neither the discount rate nor the tax rate is incorporated into the equation. Additionally, remember that  $(1 - \text{Dividend Payout Ratio})$  is the same thing as the Retention Rate of Dividends.

-----

Congress considered a tax plan that would reduce capital gains tax rates from the existing levels. The current maximum capital gains rate is 28 percent compared with a maximum rate of 31 percent for ordinary personal income. With this tax bill, which of the following statements is least correct for an investor in a high personal tax bracket?

- \* A 2-for-1 stock split is announced for a stock that the investor currently holds. The company had split the stock because the stock price had increased beyond the desired price range and is expected to continue to grow. This is good news to the investor because it means that any gains from increased stock value will be taxed at a new lower capital gains rate when the stock is sold.
- \* None of these statements are correct.
- \* One of the companies in the investor's portfolio recently announced that it will embark on a stock repurchase plan. The lower capital gains tax rate will reduce the investor's taxes if he/she decides to tender some shares of stock in the company.
- \* All of these statements are correct.
- \* The stock of a company that pays high cash dividends and has a dividend reinvestment plan (DRIP) is a good investment for this individual because he/she will receive more money that can then be reinvested in the company's stock.

That answer is incorrect.

Correct answer:

The stock of a company that pays high cash dividends and has a dividend reinvestment plan (DRIP) is a good investment for this individual because he/she will receive more money that can then be reinvested in the company's stock.

In a dividend reinvestment plan, the stockholder must pay taxes on the dividend amount, even though stock and not cash has been received.

-----

Which of the following is/are true about operating cash flows of a project?

- I. The annual operating cash flow equals operating income minus net non-cash expenses.
- II. Financing costs are excluded from the operating cash flows.
- III. Project evaluation is based on net cash flows, not net income.

- \* III only
- \* I, II & III
- \* I only
- \* II & III
- \* I & III
- \* II only
- \* I & II

That answer is incorrect.

Correct answer:

II & III

The annual operating cash flow equals operating income plus net non-cash expenses. Financing costs are excluded since they are accounted for in the discounting process through the use of WACC.

-----

Which of the following statements is correct?

- \* Net cash flow for capital budgeting includes return on capital, which is net income, and return of capital, which is depreciation.
- \* When a firm implements a project which requires an increase in working capital, both the increase in current assets and current liabilities must be financed.
- \* The change in working capital for a project is the difference between the required increase in current assets and the spontaneous increase in current liabilities and is always positive.
- \* Capital budgeting analysis for expansion and replacement projects is essentially the same because the types of cash flows involved are the same.
- \* The replacement decision involves an analysis of two independent projects where the relevant cash flows include the initial investment, additional depreciation, and the terminal value.

That answer is correct!

Capital budgeting decisions must be based on cash flows, not accounting income, and only incremental cash flows are relevant to the accept/reject decision.

-----

Vanderheiden Inc. is considering two average-risk alternative ways of producing its patented polo shirts. Process S has a cost of \$8,000 and will produce net cash flows of \$5,000 per year for 2 years. Process L will cost \$11,500 and will produce cash flows of \$4,000 per year for 4 years. The company has a contract that requires it to produce the shirts for 4 years, but the patent will expire after 4 years, so the shirts will not be produced after 4 years. Inflation is expected to be zero during the next 4 years. If cash inflows occur at the end of each year, and if Vanderheiden's cost of capital is 10 percent, by what amount will the better project increase Vanderheiden's value?

- \* \$1,179.46
- \* \$1,237.76
- \* \$677.69
- \* \$1,312.31
- \* \$1,098.89

That answer is incorrect.

Correct answer:

\$1,237.76

	0	1	2	3	4
S	-8,000	5,000	5,000	5,000	5,000
		-8,000			



-3,000

IRR(S) = 16.26%.  
 NPV(S) = \$1,237.76. (extended NPV)

	0 k = 10%	1	2	3	4
L					
	-11,500	4,000	4,000	4,000	4,000

IRR(L) = 14.66%.  
 NPV(L) = \$1,179.46.

-----

Intelligent Semiconductor, a diversified technology company, is evaluating the sales of its cadmium silicon transistor coils, and has identified the following information:

Fixed production costs for these transistors are \$800,000  
 Average sales price per unit is \$505.50  
 Breakeven quantity of 4,084

Which of the following best describes the average variable cost for this product?

- \* \$424.16
- \* \$195.89
- \* \$20.84
- \* \$309.61
- \* The average variable cost cannot be determined from the information provided.

That answer is incorrect.

Correct answer:  
 \$309.61

To calculate the breakeven quantity for a product, use the following equation:  $\{\text{Fixed operating costs} / [\text{avg. sales price per unit} - \text{variable cost per unit}]\}$ . To determine the average variable cost of this product, we must rearrange the standard equation using algebra, in a manner such that the resulting equation resembles the following:  $\{[\$800,000 / 4,084] + X = \$505.50\}$ .

This equation is further rearranged into the following:  $\{\$195.89 + X = \$505.50\}$ . Finally, the ending equation becomes:  $\{X = \$505.50 - \$195.89\}$ . Solving for X yields an average variable cost per unit of \$309.61.

-----

Martin Corporation currently sells 180,000 units per year at a price of \$7.00 per unit; its variable cost is \$4.20 per unit; and fixed costs are \$400,000. Martin is considering expanding into two additional states which would increase its fixed costs to \$650,000 and would increase its variable unit cost to an average of \$4.48 per unit. If Martin expands it expects to sell 270,000 units at \$7.00 per unit. By how much will Martin's breakeven sales dollar level change?

- \* \$910,667
- \* \$183,333
- \* \$456,500
- \* \$1,200,000

\* \$805,556

That answer is incorrect.

Correct answer:

\$805,556

Calculate the initial breakeven volume in dollars:

Old  $S(BE) = FC / (1 - (VC/S)) = \$400,000 / (1 - (4.20/7.00)) = \$1,000,000$ .

Calculate the new breakeven volume in sales dollars:

New  $S(BE) = FC / (1 - (VC/S)) = \$650,000 / (1 - (4.48/7.00)) = \$1,805,556$ .

The increase in SB =  $\$1,805,556 - \$1,000,000 = \$805,556$ .

-----

When a firm uses no debt,

- \* its financial risk equals its business risk.
- \* its business risk equals the market risk.
- \* all of these answers.
- \* its ROA equals its ROE.

That answer is incorrect.

Correct answer:

its ROA equals its ROE.

With no debt, total capital equals total equity, giving  $ROA = ROE$ . Note that without debt, financial risk is zero since financial risk is defined as the additional risk caused due to debt in the capital structure. Market risk is the systematic risk arising from the correlation of the firm's stock price with the market and is different from business risk.

-----

It has been observed in the market that most of the increases in dividends are followed by an increase in the stock price and vice-versa. This implies that:

- I. at least one of the M&M assumptions must be false.
- II. there must be signaling effects involved.
- III. investors are behaving irrationally.

- \* II only
- \* III only
- \* I, II & III
- \* II & III
- \* I & II
- \* I only

That answer is incorrect.

Correct answer:

I only

If all of the M&M assumptions held, a change in dividend policy would not cause the stock price to change; dividend policy would be irrelevant. However, one does not necessarily need signaling effects to account for market behavior. Other theories like the Bird-in-the-Hand theories can also explain the phenomenon in the presence of transaction costs. In itself, then, the phenomenon does not imply that the market is behaving irrationally.

-----

Which of the following statements is most correct?

- \* None of the statements are correct.
- \* Firms whose sales are very sensitive to changes in the business cycle are more likely to rely on debt financing.
- \* Firms with large tax loss carry forwards are more likely to rely on debt financing.
- \* All of these statements are correct.
- \* Firms with a high operating leverage are more likely to rely on debt financing.

That answer is correct!

All of these firms should desire low operating leverage. Firms that are sensitive to business cycles should have low debt financing to keep fixed costs low. Firms with large tax loss carry forwards are in a lower tax bracket and do not need the interest deductibility of debt. Firms with high operating leverage have high fixed costs and should not rely on debt financing.

-----

Your assistant has just completed an analysis of two mutually exclusive projects. You must now take her report to a board of directors meeting and present the alternatives for the board's consideration. To help you with your presentation, your assistant also constructed a graph with NPV profiles for the two projects. However, she forgot to label the profiles, so you do not know which line applies to which project. Of the following statements regarding the profiles, which one is most reasonable?

- \* If one of the projects has a NPV profile which crosses the X-axis twice, hence the project appears to have two IRRs, your assistant must have made a mistake.
- \* If the two projects' NPV profiles cross once, in the upper left quadrant, at a discount rate of minus 10 percent, then there will probably not be a NPV versus IRR conflict, irrespective of the relative sizes of the two projects, in any meaningful, practical sense (that is, a conflict which will affect the actual investment decision).
- \* If the two projects both have a single outlay at  $t = 0$ , followed by a series of positive cash inflows, and if their NPV profiles cross in the lower left quadrant, then one of the projects should be accepted. Both would be accepted if they were not mutually exclusive.
- \* Whenever a conflict between NPV and IRR exist, then, if the two projects have the same initial cost, the one with the steeper NPV profile probably has less rapid cash flows. However, if they have identical cash flow patterns, then the one with the steeper profile probably has the lower initial cost.
- \* If the two projects have the same investment cost, and if their NPV profiles cross once in the upper right quadrant, at a discount rate of 40 percent, this suggests that a NPV versus IRR conflict is not likely to exist.

That answer is incorrect.

Correct answer:

If the two projects' NPV profiles cross once, in the upper left quadrant, at a discount rate of minus 10

percent, then there will probably not be a NPV versus IRR conflict, irrespective of the relative sizes of the two projects, in any meaningful, practical sense (that is, a conflict which will affect the actual investment decision).

A conflict will exist if the cost of capital is less than the crossover rate. In this case the cost of capital must be greater than minus 10 percent and, therefore, there will probably not be a NPV versus IRR conflict.

-----

Consider the following information for Company ABC:

Current Price of Stock \$25.5  
Expected dividend in 1 Year \$1.00  
Growth rate 8.0%  
Beta 1.2  
Risk Free Rate 4.5%

Calculate this company's cost of retained earnings using the Discounted Cash Flow (DCF) method.

- \* 13.30%
- \* 8.0%
- \* 12.0%
- \* 11.92%
- \* 12.2%

That answer is incorrect.

Correct answer:  
11.92%

The DCF method for estimating the cost of retained earnings states: Cost of Retained Earnings = (Dividend for period 1 / Current Price) + Growth Rate. In this case the estimated Cost of Retained Earnings =  $(1 / 25.5) + 8.0\% = 3.92 + 8.00 = 11.92\%$

-----

If you know that your firm is facing relatively poor prospects but needs new capital, and you know that investors do not have this information, signaling theory would predict that you would

- \* postpone going into capital markets until your firm's prospects improve.
- \* be indifferent between issuing debt and equity.
- \* issue debt to maintain the returns of equity holders.
- \* issue equity to share the burden of decreased equity returns between old and new shareholders.
- \* convey your inside information to investors using the media to eliminate the information asymmetry.

That answer is incorrect.

Correct answer:  
issue equity to share the burden of decreased equity returns between old and new shareholders.

The announcement of a stock offering is generally taken as a signal that the firm's prospects as seen by its management are not bright.

-----  
Which of the following is/are advantages of stock repurchases?

- I. Stock repurchases increase the price per share by reducing the number of shares.
- II. Stock repurchases are often viewed as a positive signal by investors, raising the intrinsic value of each share and increasing shareholder value.
- III. Stock repurchases allow firms to distribute funds to shareholders without raising "sticky" dividends.

- \* II only
- \* II & III
- \* I only
- \* I & III
- \* I, II & III
- \* III only
- \* I & II

That answer is incorrect.  
Correct answer:  
II & III

The value of a stock repurchase does not come from a simple reduction in the number of shares outstanding. Remember that for this reduction, the firm must pay out part of its assets in the buy-back process. If such a buyback takes place at a fair price, the shareholder value is completely unaffected, for all you have done is exchanged cash for an equivalent value of common stock. The real wealth increase through a repurchase program arises from real and tangible effects like the interpretation of the program as a positive signal about future prospects. Further, if the management thinks that excess cash reserves are only temporary, then they would be reluctant to raise dividends and add instability to dividend policy. Repurchase programs allow them to distribute excess funds without paying them as dividends.

-----  
Martin Fillmore is a big football star who has been offered contracts by two different teams. The payments (in millions of dollars) he receives under the two contracts are listed below:

Time	Team A	Team B
	Cash Flows	Cash Flows
0	8.0	2.5
1	4.0	4.0
2	4.0	4.0
3	4.0	8.0
4	4.0	8.0

Fillmore is committed to accepting the contract that provides him with the highest net present value (NPV). At what discount rate would he be indifferent between the two contracts?

- \* 16.49%
- \* 10.85%
- \* 11.35%
- \* 19.67%

\* 21.03%

That answer is incorrect.

Correct answer:

11.35%

First, find the differential CFs by subtracting Team A CFs from Team B CFs (or vice versa). Enter these into the cash flow register; then solve to find IRR/YR to get the discount rate for which he is indifferent between the two contracts, 11.35%.

-----

Which of the following statements is incorrect?

\* NPV can be negative if the IRR is positive.

\* Assuming a project has normal cash flows, the NPV will be positive if the IRR is less than the cost of capital.

\* If  $IRR = k$  (the cost of capital), then  $NPV = 0$ .

\* If the multiple IRR problem does not exist, any independent project acceptable by the NPV method will also be acceptable by the IRR method.

\* The NPV method is not affected by the multiple IRR problem.

That answer is incorrect.

Correct answer:

Assuming a project has normal cash flows, the NPV will be positive if the IRR is less than the cost of capital.

NPV is positive if IRR is greater than the cost of capital.

-----

Anderson Company has four investment opportunities with the following costs (all costs are paid at  $t=0$ ) and estimated internal rates of return (IRR):

Project	Cost	IRR
A	\$2,000	16.0%
B	\$3,000	14.5
C	\$5,000	11.5
D	\$3,000	9.5

The company has a target capital structure, which consists of 40 percent common equity, 40 percent debt, and 20 percent preferred stock. The company has \$1,000 in retained earnings. The company expects its year-end dividend to be \$3.00 per share. The dividend is expected to grow at a constant rate of 5 percent a year. The company's stock price is currently \$42.75. If the company issues new common stock, the company will pay its investment bankers a 10 percent flotation cost.

The company can issue corporate bonds with a yield to maturity of 10 percent. The company is in the 35 percent tax bracket. How large can the cost of preferred stock be (including flotation costs) and it still be profitable for the company to invest in all four projects?

- \* 7.75%
- \* 12.68%
- \* 10.46%
- \* 8.90%
- \* 11.54%

That answer is incorrect.

Correct answer:

8.90%

We need to find  $k(ps)$  at the point where all 4 projects are accepted. In other words, the capital budget = \$2,000 + \$3,000 + \$5,000 + \$3,000 = \$13,000. The WACC at that point is equal to  $IRR(D) = 9.5\%$ .

Step 1 Find the retained earnings break point to determine whether  $k(s)$  or  $k(e)$  is used in the WACC calculation:

$$BP(RE) = \$2,500.$$

Since the capital budget > the retained earnings break point,  $k(e)$  is used in the WACC calculation.

Step 2 Calculate  $k(e)$ :

$$k(e) = [3.00/\$42.75(1-.10)] + 5\% = 12.80\%.$$

Step 3 Find  $k(ps)$ :

$$9.5\% = 0.4(10\%)(0.65) + 0.2(kps) + 0.4(12.80\%)$$

$$9.5\% = 2.60\% + 0.2(kps) + 5.12\%$$

$$1.78\% = 0.2k(ps)$$

$$8.90\% = k(ps).$$

-----

Assume that all the assumptions of Modigliani and Miller hold. In particular, there are no taxes and transaction costs. A firm has a policy of paying out 5% of the stock price as dividends. However, an investor would like to receive a 7% dividend. For this, he should:

- \* liquidate 7% of his stock holding after receiving the dividend.
- \* liquidate 2% of his stock holding after receiving the dividend.
- \* use the dividend to buy 2% of the stock after receiving the dividend.
- \* none of these answers.

That answer is incorrect.

Correct answer:

none of these answers.

Suppose the investor is holding stocks worth \$100. The company then pays \$5 as dividends. When the dividend is paid out, the stock price falls to \$95 (in the absence of tax effects, as assumed). To increase his income to \$7, the investor must sell off stocks worth \$2. This corresponds to  $2/95 = 2.105\%$  of the post dividend stock holding.

-----

Which of the following statements is most correct?

- \* None of the answers are correct.
- \* All else equal, an increase in flotation costs will increase the cost of retained earnings.
- \* When calculating the weighted average cost of capital, firms should rely on historical costs rather than the marginal cost of capital.
- \* Since stockholders do not generally pay corporate taxes, corporations should focus on before-tax cash flows when calculating the Weighted Average Cost of Capital (WACC).
- \* All of these answers are correct.

That answer is correct!

After-tax cash flows must be considered in order to account for the tax deductibility of interest payments on corporate debt. An increase in flotation costs will leave the cost of retained earnings unchanged, but will raise the cost of new equity issues. The marginal, not the embedded, cost of capital is the relevant cost of capital.

-----

Which of the following statements is correct?

- \* The cost of debt used in calculating the WACC is an average of the after-tax cost of new debt and of outstanding debt.
- \* Preferred stock does not involve any adjustment for flotation cost since the dividend and price are fixed.
- \* The cost of new common equity includes an adjustment for flotation costs which is expressed as a fixed percentage of the current stock price. The flotation percentage is determined jointly by the current price of the firm's stock and its growth rate.
- \* The opportunity cost principle implies that if the firm cannot invest retained earnings and earn at least  $k(s)$  (component cost of retained earnings or internal equity), it should pay these funds to its stockholders and let them invest directly in other assets that do provide this return.
- \* Capital components are the types of capital used by firms to raise money. All capital comes from one of three types: long-term debt, preferred stock, and equity.

That answer is incorrect.

Correct answer:

The opportunity cost principle implies that if the firm cannot invest retained earnings and earn at least  $k(s)$  (component cost of retained earnings or internal equity), it should pay these funds to its stockholders and let them invest directly in other assets that do provide this return.

The firm's after-tax earnings belong to its stockholders. All earnings remaining after interest and preferred dividends belong to them, and these earnings serve to compensate stockholders for the use of their capital. The firm may either pay out earnings as dividends or retain them and reinvest them in the firm.

If the firm retains earnings, there is an opportunity cost involved - stockholders could have received the earnings as dividends and invested the money in other investments. Thus, the firm should earn on its retained earnings at least as much as the stockholders themselves could have earned on alternative investments of comparable risk.

-----



Foxglove Corp. is faced with an investment project. The following information is associated with this project:

Year	Net Income*	Allowable Depreciation for 3-Yr. MACRS class
1	\$50,000	0.33
2	60,000	0.45
3	70,000	0.15
4	60,000	0.07

\*Assume no interest expenses and a zero tax rate.

The project involves an initial investment of \$100,000 in equipment that falls in the 3-year MACRS class and has an estimated salvage value of \$15,000. In addition, the company expects an initial increase in net working capital of \$5,000, which will be recovered in year 4. The cost of capital for the project is 12 percent.

What is the project's net present value? (Round your final answer to the nearest whole dollar.)

- \* \$153,840
- \* \$168,604
- \* \$162,409
- \* \$159,071
- \* \$182,344

That answer is incorrect.

Correct answer:

\$168,604

Step 1 Calculate depreciation:

$$\text{Dep 1} = 100,000(0.33) = 33,000.$$

$$\text{Dep 2} = 100,000(0.45) = 45,000.$$

$$\text{Dep 3} = 100,000(0.15) = 15,000.$$

$$\text{Dep 4} = 100,000(0.07) = 7,000.$$

Step 2 Calculate cash flows:

$$\text{CF 0} = -100,000 - 5,000 = -105,000.$$

$$\text{CF 1} = 50,000 + 33,000 = 83,000.$$

$$\text{CF 2} = 60,000 + 45,000 = 105,000.$$

$$\text{CF 3} = 70,000 + 15,000 = 85,000.$$

$$\text{CF 4} = 60,000 + 7,000 + 5,000 + 15,000 = 87,000.$$

Step 3 Calculate NPV:

Use CF key on calculator. Enter cash flows shown above. Enter I/YR = 12%. Solve for NPV = \$168,604.

-----

Chandler Communications' CFO has provided the following information:

- \* The company's capital budget is expected to be \$5,000,000.
- \* The company's target capital structure is 70 percent debt and 30 percent equity.
- \* The company's net income is \$4,500,000.

If the company follows a residual dividend policy, what portion of its net income should it pay out as dividends this year?

- \* 66.67%
- \* 40.00%
- \* 33.33%
- \* 60.00%
- \* 50.00%

That answer is correct!

$\$5,000,000 \times 0.3 = \$1,500,000$  of retained earnings needed to fund the capital budget.  $\$4,500,000 - \$1,500,000 = \$3,000,000$  of net income available for dividends. Dividend payout ratio =  $\$3,000,000 / \$4,500,000 = 0.6667$ , or 66.67%.

-----

If the MM hypothesis about dividends is correct, and if one found a group of companies which differed only with respect to dividend policy, which of the following statements would be most correct?

- \* All of these statements are true.
- \* The residual dividend model should not be used, because it is inconsistent with the MM dividend hypothesis.
- \* The total expected return, which in equilibrium is also equal to the required return, would be higher for those companies with lower payout ratios because of the greater risk associated with capital gains versus dividends.
- \* None of these statements are true.
- \* If the expected total return of each of the sample companies were divided into a dividend yield and a growth rate, and then a scatter diagram (or regression) analysis were undertaken, then the slope of the regression line (or b in the equation  $D1/P_0 = a + b(g)$ ) would be equal to +1.0.

That answer is incorrect.

Correct answer:

None of these statements are true.

None of these statements are correct. Miller and Modigliani argued that the value of the firm depends only on the income produced by its assets, not on how this income is divided between dividends and retained earnings.

-----

Which of the following terms describes the risk of individual projects to a corporation, taking into consideration that each project represents only one of the firm's portfolio of assets?

- \* Alpha coefficient
- \* Corporate risk
- \* Stand-alone risk

- \* Systematic risk
- \* Market risk

That answer is incorrect.

Correct answer:

Corporate risk

Corporate, or "within-firm" risk, is defined as the risk of individual projects to a corporation, taking into consideration the fact that each project represents only one of the firm's assets. In examining corporate risk, there is an implicit assumption that some of the total risk to the firm's profits from the addition of new projects will be partially diversified away. Corporate risk is measured by the project's impact on uncertainty about the firm's future earnings.

-----

Which of the following statements best describes the optimal capital structure?

- \* All of these answers are correct.
- \* None of these answers are correct.
- \* The optimal capital structure is the mix of debt, equity, and preferred stock, which maximizes the company's stock price.
- \* The optimal capital structure is the mix of debt, equity, and preferred stock which minimizes the company's cost of debt.
- \* The optimal capital structure is the mix of debt, equity, and preferred stock which maximizes the company's earnings per share (EPS).

That answer is incorrect.

Correct answer:

The optimal capital structure is the mix of debt, equity, and preferred stock, which maximizes the company's stock price.

The optimal capital structure is the one that maximizes the price of the firm's stock, and minimizes the firm's WACC.

-----

Consider the following information:

30-day treasury rate (Risk Free rate) 6.4%

Company XYZ Bond yield 11.2%

Beta 1.1

Risk Premium 3.5%

Credit Rating B-

Marginal Tax Rate 40%

Calculate Company XYZ's cost of retained earnings using the Bond-Yield-plus-Risk-Premium approach.

- \* 17.6%
- \* 15.2%
- \* 14.7%
- \* 8.82%

\* 16.17%

\* 11.36%

That answer is incorrect.

Correct answer:

14.7%

To estimate a firm's cost of retained earnings using the Bond-Yield-plus-Risk-Premium approach, simply take the company's bond yield and add the risk premium. In this case the cost of retained earnings =  $11.2\% + 3.5\% = 14.7\%$ .

-----  
An increase in which of the following, holding everything else equal, will cause a decrease in the theoretical growth rate of common stock dividends according to the Growth Rate of Dividends Model?

- I. Return on equity
- II. Tax rate
- III. Dividend payout ratio
- IV. Annual dividend
- V. Discount rate
- VI. Beta coefficient
- VII. Retention rate

\* I, II, IV

\* II, III, VI, V

\* I, II, VI, V

\* III

\* III, VI, VII

\* VII

That answer is incorrect.

Correct answer:

III

The equation used to determine the theoretical growth rate of common stock dividends is as follows:

{Annual growth rate = [ROE \* (1 - dividend payout ratio)]}

As you can see, of the choices listed, only an increase in the dividend payout ratio will cause a decrease in the theoretical growth rate of common stock dividends. Remember that the retention rate is equal to (1 - dividend payout ratio). Additionally, neither the discount rate nor the tax rate is explicitly factored into the dividend growth rate equation.

-----  
Which of the following statements is most correct?

\* If your company has established a clientele of investors who prefer large dividends, the company is unlikely to adopt a residual dividend policy.

\* None of these statements are correct.

- \* If a firm follows a residual dividend policy, holding all else constant, its dividend payout will tend to rise whenever the firm's investment opportunities improve.
- \* All of these statements are correct.
- \* The tax code encourages companies to pay large dividends to their shareholders.

That answer is correct!

The clientele effect is the tendency of a firm to attract a set of investors who like its dividend policy. The residual dividend model is a model in which the dividend paid is set equal to the actual earnings minus the amount of retained earnings necessary to finance the firm's optimal capital budget.

The residual dividend policy minimizes the costs to the company of raising outside funds, but it does not provide a stable cash flow to the investors and most investors prefer stable dividends.

-----

A stock has a beta of 0.85 and the risk-free rate is 6.95%. Its dividend growth rate is 5.2% and its P/E ratio is 11.6. If the firm has a dividend payout ratio of 63%, the market risk premium equals \_\_\_\_\_.

- \* 5.91%
- \* 6.54%
- \* 5.15%
- \* 4.33%

That answer is incorrect.

Correct answer:

4.33%

$P0/E1 = \text{dividend payout}/(k - g)$

Therefore,  $11.6 = 0.63/(k - 0.052)$ , giving expected return =  $k = 10.63\%$ .

Now, the CAPM expected return on the stock is given by  $k = R_f + \text{beta} \cdot (R_m - R_f)$ .

Therefore,  $10.63\% = 6.95\% + 0.85 \cdot \text{market premium}$ , giving market premium =  $(10.63 - 6.95)\% / 0.85 = 4.33\%$ .

-----

Which of the following statements is most correct?

- \* Generally, we do not need to adjust project cash flows to take into account the effects of inflation, since inflation is not accounted for in the cost of capital.
- \* All of these statements are correct.
- \* For comparing mutually exclusive projects with unequal lives, replacement chain analysis leads to the same decision as obtained by calculating the equivalent annual annuity (EAA).
- \* In comparing mutually exclusive projects with unequal lives, you should always choose the project which has the highest NPV.
- \* The rate of depreciation affects accounting statements, but has no effect on the firm's capital budgeting decisions.

That answer is incorrect.

Correct answer:

For comparing mutually exclusive projects with unequal lives, replacement chain analysis leads to the same decision as obtained by calculating the equivalent annual annuity (EAA).

The replacement chain analysis and the equivalent annual annuity methods lead to the same decision. Depreciation affects a firm's cash flow, which affects its capital budgeting decisions. The project with the highest extended NPV should be chosen. The cost of capital reflects inflation; therefore, project cash flows must be adjusted for inflation.

-----  
Which of the following figures is not explicitly incorporated into the earnings per share (EPS) calculation?

- \* Variable costs
- \* Common shares outstanding
- \* Interest expense
- \* None of these answers
- \* Fixed costs
- \* Sales

That answer is incorrect.  
Correct answer:  
None of these answers

The EPS figure can be found using two principal equations. The first is illustrated as follows:

{EPS = [(Sales - Fixed Costs - Variable Costs - Interest Expense)(1 - Tax Rate)] / [# of Common Shares Outstanding]}

Additionally, the EPS figure can be found by:

{EPS = [(EBIT - Interest Expense)(1 - Tax Rate) / # of Common Shares Outstanding]}

As you can see, all of the choices listed are expressly incorporated into the EPS calculation.

-----  
A firm's capital structure has a debt-to-equity ratio of 1.2. The pretax cost of debt is 6.8% and the weighted average cost of capital of the firm equals 9.8%. The risk-free rate in the economy is 6.2% the expected rate of return on the market is 14%. The firm must pay 35% of its gross income in taxes. The beta of the stock equals \_\_\_\_\_.

- \* 1.02
- \* 1.64
- \* 1.3
- \* 0.91

That answer is incorrect.  
Correct answer:  
1.3

Since the debt interest is tax deductible, the after-tax cost of debt equals  $6.8\% \times (1 - 0.35) = 4.42\%$ . Since the D/E ratio = 1.2,  $(D+E)/E = 2.2$ , giving  $E/(D+E) = 0.455$ . Thus, equity forms 45.5% of the capital while

debt forms 54.5%. The WACC is then equal to  $0.455 \cdot RE + 0.545 \cdot 4.42\% = 9.8\%$  (given). Solving gives  $RE = 16.24\%$ . If B is the beta of the stock, then using CAPM,  $16.24\% = 6.2\% + B \cdot (14\% - 6.2\%)$ , giving  $B = 1.29$ .

-----  
Which of the following equations correctly illustrates the calculation of the Weighted Average Cost of Capital (WACC)?

- \* None of these answers
- \*  $\{ \{ \text{Percentage of debt} \cdot [\text{coupon on outstanding debt} \cdot (1 - \text{combined state/federal tax rate})] \} + \{ \text{percentage of preferred stock} \cdot [\text{annual preferred dividend} / (\text{required rate of return})] \} + \{ \text{percentage of common equity} \cdot \text{cost of common equity} \} \}$
- \*  $\{ \{ \text{Percentage of debt} \cdot [\text{coupon on outstanding debt} \cdot (1 + \text{combined state/federal tax rate})] \} + \{ \text{percentage of preferred stock} \cdot [\text{annual preferred dividend} / (\text{offering price} - \text{flotation costs})] \} + \{ \text{percentage of common equity} \cdot \text{cost of common equity} \} \}$
- \*  $\{ \{ \text{Percentage of debt} \cdot [\text{yield to maturity of outstanding debt} \cdot (1 - \text{combined state/federal tax rate})] \} + \{ \text{percentage of preferred stock} \cdot [\text{annual preferred dividend} / (\text{offering price} - \text{flotation costs})] \} + \{ \text{percentage of common equity} \cdot \text{cost of common equity} \} \}$
- \*  $\{ \text{Average cost of equity} + \text{average cost of debt} + \text{average cost of preferred stock} \} \cdot \text{subjective divisor}$
- \*  $\{ \text{Percentage of debt} \cdot [\text{coupon on outstanding debt} \cdot (1 + \text{combined state/federal tax rate})] \} + \{ \text{percentage of preferred stock} \cdot [\text{annual preferred dividend} / (\text{offering price} + \text{flotation costs})] \} + \{ \text{percentage of common equity} \cdot \text{cost of common equity} \}$

That answer is incorrect.

Correct answer:

$\{ \{ \text{Percentage of debt} \cdot [\text{yield to maturity of outstanding debt} \cdot (1 - \text{combined state/federal tax rate})] \} + \{ \text{percentage of preferred stock} \cdot [\text{annual preferred dividend} / (\text{offering price} - \text{flotation costs})] \} + \{ \text{percentage of common equity} \cdot \text{cost of common equity} \} \}$

The Weighted Average Cost of Capital is a fundamentally important concept within the field of corporate finance, and the CFA candidate should have a complete understanding of both the mechanics of the WACC figure, as well as the relationships between its components. In calculating the cost of outstanding common equity, there exist three distinct methods, the Dividend-Yield-plus-Growth-Rate, or Discounted Cash Flow approach, the Capital Asset Pricing Model (CAPM), and the Bond-Yield-plus-Risk-Premium approach. It is important for the CFA candidate to have a complete understanding of each method, along with their weaknesses and advantages.

-----  
Lincoln Lodging Inc. estimates that if its sales increase 10 percent then its net income will increase 18 percent. The company's EBIT equals \$2.4 million, and its interest expense is \$400,000. The company's operating costs include fixed and variable costs. What is the level of the company's fixed operating costs?

- \* \$2,125,000
- \* \$2,000,000
- \* \$1,200,000
- \* \$666,667
- \* \$450,000

That answer is incorrect.

Correct answer:  
\$1,200,000

We're given enough information to find both DFL and DTL.

$$DTL = .18/.10 = 1.8.$$

$$DFL = \$2,400,000/(\$2,400,000 - \$400,000) = 1.2$$

Given  $DTL = DFL \times DOL$ , we can calculate  $DOL = 1.5$ . Recognizing  $S - VC - FC = EBIT$ ,  $1.5 = (S - VC)/\$2,400,000$  or  $S - VC = \$3,600,000$ . The difference between  $(S - VC)$  and EBIT must represent fixed operating costs. Thus,  $FC = \$3,600,000 - \$2,400,000 = \$1,200,000$ .

-----

The Altman Company has a debt ratio of 33.33 percent, and it needs to raise \$100,000 to expand. Management feels that an optimal debt ratio would be 16.67 percent. Sales are currently \$750,000, and the total assets turnover is 7.5. How should the expansion be financed so as to produce the desired debt ratio?

- \* Finance 20 percent debt, 80 percent equity.
- \* Finance 40 percent debt, 60 percent equity.
- \* Finance it all with debt.
- \* Finance 50 percent debt, 50 percent equity.
- \* Finance it all with equity.

That answer is incorrect.

Correct answer:  
Finance it all with equity.

Old debt ratio = 0.3333; New debt ratio = 0.1667.

$\$750,000/TA = 7.5$ .

$TA = \$100,000$ .

$Debt = 0.3333(\$100,000) = \$33,330$ .

$New\ TA = \$100,000 + \$100,000 = \$200,000$ .

$New\ Debt = \$200,000(0.1667) = \$33,340$ .

Altman's current debt of \$33,330 represents approximately 16.67% of total assets following the expansion, thus the firm should finance with 100 percent equity.

-----

Which of the following is a key determinant of operating leverage?

- \* Cost of debt.
- \* Technology.
- \* Level of debt.
- \* Capital structure.
- \* Physical location of production facilities.

That answer is incorrect.

Correct answer:



Technology.

If a high percentage of a firm's total costs are fixed, the firm has high operating leverage. Higher fixed costs are generally associated with more highly automated, capital-intensive firms and industries.

-----

Which of the following statements is most correct?

- \* All of these answers are correct.
- \* An increase in the risk-free rate is likely to decrease the marginal cost of both debt and equity financing.
- \* The WACC is calculated on a before-tax basis.
- \* None of these answers are correct.
- \* The WACC (Weighted Average Cost of Capital) for a given capital budget level is a weighted average of the marginal cost of each relevant component which makes up the firm's target capital structure.

That answer is incorrect.

Correct answer:

The WACC (Weighted Average Cost of Capital) for a given capital budget level is a weighted average of the marginal cost of each relevant component which makes up the firm's target capital structure.

A value-maximizing firm will establish a target (optimal) capital structure and then raise new capital in a manner that will keep the actual capital structure on target over time. The target proportions of debt, preferred stock, and common equity, along with the component cost of capital, are used to calculate the firm's WACC.

-----

Which of the following statements is most correct?

- \* The factors which affect a firm's business risk are determined partly by industry characteristics and partly by economic conditions. Unfortunately, these and other factors, which affect a firm's business risk, are not subject to any degree of managerial control.
- \* The firm's financial risk may have both market risk and diversifiable risk components.
- \* One of the benefits to a firm of being at or near its target capital structure are that financial flexibility becomes much less important.
- \* A firm's business risk is solely determined by the financial characteristics of its industry.
- \* All of these statements are false.

That answer is incorrect.

Correct answer:

The firm's financial risk may have both market risk and diversifiable risk components.

Financial risk is an increase in stockholders' risk, over and above the firm's basic business risk, resulting from the use of financial leverage, which refers to the use of fixed-income securities.

-----

Jackson Jets is considering two mutually exclusive projects. The projects have the following cash flows:

Time	Project A Cash Flows	Project B Cash Flows
0	-\$10,000	-\$8,000
1	1,000	7,000
2	2,000	1,000
3	6,000	1,000
4	6,000	1,000

At what cost of capital, do the two projects have the same net present value?

- \* 13.03%
- \* 12.26%
- \* 11.20%
- \* 12.84%
- \* 14.15%

That answer is correct!

Find the differential cash flows by subtracting B's cash flows from A's cash flows for each year.

$$CF(0) = -2,000$$

$$CF(1) = -6,000$$

$$CF(2) = 1,000$$

$$CF(3) = 5,000$$

$$CF(4) = 5,000$$

Enter these cash flows and solve for the IRR = crossover rate = 13.03%.

-----

Which of the following types of risk cannot be eliminated through diversification? Choose the best answer

- \* Unsystematic risk
- \* Market risk
- \* Corporate risk
- \* Alpha risk
- \* Gamma risk

That answer is incorrect.

Correct answer:

Market risk

Market risk is defined as that part of an asset's risk which cannot be eliminated through diversification. Market risk is measured by the Beta coefficient, and is commonly referred to as "systematic" or "non-diversifiable" risk. Additionally, market risk is referred to as "beta risk."

Corporate risk is defined as the variability of assets expected returns without taking into consideration the effects of shareholder diversification. This is one step away from Stand-alone Risk, which measures the risk of an asset, not only without taking into consideration the effect of shareholder diversification, but of company diversification as well. Stand-alone risk assumes that the asset in question is the only asset of the firm and that the securities of the firm are the only assets in investors' portfolios. Corporate risk takes into consideration that firms will diversify their asset bases.

-----  
Which of the following statements is most correct?

- \* An increase in the risk-free rate is likely to increase the marginal cost of equity financing.
- \* The weighted average cost of capital is calculated on a before-tax basis.
- \* None of these answers.
- \* All of these answers.

That answer is correct!

Recall that if a stock is in equilibrium, then its required rate of return equals its expected rate of return. An increase in the risk-free rate will increase the required rate of return since the required return equals the risk-free rate plus a risk premium. This will result in an increase in the cost of common stock component.

-----

Dumb & Dumber Development Company has two mutually exclusive investment projects to evaluate. Assume both projects can be repeated indefinitely. The following cash flows are associated with each project:

Time	Project A	Project B
0	-\$100,000	-\$70,000
1	30,000	30,000
2	50,000	30,000
3	70,000	30,000
4	-	30,000
5	-	10,000

The project types are equally risky and the firm's cost of capital is 12 percent. What is the EAA of the higher valued project? (Round your final answer to the nearest whole dollar.)

- \* \$16,470
- \* \$7,433
- \* \$11,325
- \* \$6,857
- \* None of the answers

That answer is incorrect.

Correct answer:

\$7,433

Step 1 Calculate the NPV for both projects:

A:  $CF(0) = -100,000$ ;  $CF(1) = 30,000$ ;  $CF(2) = 50,000$ ;  $CF(3) = 70,000$ ;  $I/YR = 12$ ; solve for  $NPV = \$16,470$ .

B:  $CF(0) = -70,000$ ;  $CF(1) = 30,000$ ;  $CF(2) = 30,000$ ;  $CF(3) = 30,000$ ;  $CF(4) = 30,000$ ;  $CF(5) = 10,000$ ;  $I/YR = 12$ ;  $NPV = \$26,795$ .

Step 2 Calculate the EAA for both projects:

A:  $N = 3$ ;  $I/YR = 12$ ;  $PV = -16,470$ ;  $FV = 0$ ; solve for  $PMT = \$6,857$ .

B:  $N = 5$ ;  $I/YR = 12$ ;  $PV = -26,795$ ;  $FV = 0$ ; solve for  $PMT = \$7,433$ .

The PMT is the EAA for each project. Since Project B has the larger EAA \$7,433 is the correct answer.

-----

Consider the following information for a company.

Common Stock Price \$53.25  
Preferred Stock Par Price \$50  
Preferred Dividend \$3.5  
Debt Rating BB+  
Owners Equity 25%  
Preferred Stock Flotation Cost 2.0%  
The Preferred Stock is issued at Par

Calculate the component cost of this newly issued preferred stock. (Note that for existing preferred stock, flotation costs may be ignored.)

- \* 18.78%
- \* 7.14%
- \* 6.57%
- \* 7.0%
- \* 10%
- \* 3.5%
- \* 12.5%

That answer is incorrect.

Correct answer:

7.14%

The component cost of preferred stock is the dividend divided by issue price minus flotation cost. In this case the component cost of preferred stock =  $\$3.50 / (50 - 1) = 7.14\%$ .

-----

A project has the following cash flows over the next 5 years: \$1,000, \$600, \$300, \$1,200 and \$1,400. Assume all cash flows occur at the end of a year. The project requires an initial cash outlay of \$2,900. The project's cost of capital is 8%. The NPV of the project equals \_\_\_\_\_.

- \* \$1,194
- \* \$1,735
- \* \$3,513
- \* \$613

That answer is incorrect.

Correct answer:

\$613

The discounted cash flow at the end of year N is obtained by dividing that year's cash flow by  $1.08^N$ , since the project's cost of capital is 8%. Using this, the discounted cash flows are:

\$926, \$514, \$238, \$882 and \$953.

The present value of all the future cash flows =  $$(926 + 514 + 238 + 882 + 953) = \$3,513$ . The NPV is then equal to  $$(3,513 - 2,900) = \$613$ .

-----

Which of the following statements is most correct?

- \* An increase in the flotation cost incurred in selling new stock will reduce the retained earnings break point, as long as the dollar level of retained earnings and the fraction of capital which is equity financed remains constant.
- \* None of these answers are correct.
- \* All of these answers are correct.
- \* An increase in a firm's corporate tax rate, will increase the firm's cost of debt capital, as long as the yield to maturity on the company's bonds remains constant or falls.
- \* An increase in the flotation cost incurred in selling new stock will increase the cost of retained earnings.

That answer is incorrect.

Correct answer:

None of these answers are correct.

An increase in the flotation cost has no effect on the cost of retained earnings or the retained earnings break point. An increase in the firm's corporate tax rate reduces the after-tax component cost of debt.

-----

Ranking conflicts occur between the NPV and IRR methods because  
I NPV profiles have differing slopes.  
II IRR assumes reinvestment of intermediate cash flows at the IRR rate.  
III IRR doesn't take into account cash flows occurring far in the future.  
IV NPV incorrectly uses the same discount rate for all cash flows.

- \* I, II and III only
- \* II only
- \* I only
- \* II, III and IV only
- \* All of these are correct
- \* I and II only

That answer is incorrect.

Correct answer:

I and II only

Project with differing initial investments and cash flow patterns may have NPV profiles with differing slopes. The point at which the NPV profiles cross represents the discount rate at which the NPV of both projects is the same. There will be ranking conflicts between NPV and IRR at discount rates below this point. The NPV method implicitly assumes that the rate at which cash flows can be reinvested is the cost of capital, whereas the IRR method assumes that the firm can reinvest at the IRR. IRR does take all cash flows into account, even those far in the future. It is correct to use the same discount rate for all project cash flows, unless you know project risk will change in the future.

-----  
Which of the following statements is/are true about observed capital structures?

- I. Firms with higher stability in sales tend to use higher debt ratios.
- II. Firms with a higher ratio of general-purpose assets to special-purpose assets tend to have higher debt ratios.
- III. Young firms with higher growth rates tend to have higher debt ratios.

- \* II only
- \* I & II
- \* I only
- \* I, II & III
- \* I & III
- \* III only

That answer is incorrect.

Correct answer:

I & II

Stability of sales implies a stability in profitability. This allows firms to service higher levels of debt without worrying about bankruptcy. Similarly, since general-purpose assets are more valuable as collateral than firm-specific assets, firms with a higher ratio of general-purpose assets to special-purpose assets tend to have higher debt ratios. However, young firms which face higher uncertainty in their project payoffs tend to favor equity financing.

-----  
Clay Industries, a large industrial firm, is examining the operating leverage of its tooling division during the last year. Consider the following information:

% change in EBIT during the last year 28%  
Sales for period 1 \$435,000  
Sales for period 2 \$578,000  
Cost of debt 7.75%  
Expected return on the market 15%  
Risk-free rate 4.55%  
Beta 1.05

Given this information, what is the operating leverage of this division during the time period in question?

- \* 0.8518
- \* 1.1741
- \* 0.9178
- \* The degree of operating leverage for this firm cannot be calculated from the information provided.
- \* 0.1322
- \* 0.98402

That answer is correct!

To calculate the degree of operating leverage, use the following equation:  $\{\% \text{ change in EBIT} / \% \text{ change in sales}\}$ . In this example, the percentage change in EBIT is provided. However, the percentage change in sales must be calculated, and can be found by the following:  $\{[\text{sales in period 2} - \text{sales in period 1}] / \text{sales in period 1}\}$ . Incorporating the given information into this equation yields a percentage change in sales of 32.87%. From this point on, the calculation of the DOL is straightforward, and can be found as follows:  $\{\% \text{ change in EBIT} 28\% / \% \text{ change in sales } 32.87\% = 0.8518$ . In attempt to trick you, the cost of debt, along with the components of the Capital Asset Pricing Model have been provided. None of these figures are relevant in the calculation of the Degree of Operating Leverage.

-----  
Which of the following statements is most correct?

- \* All of these answers are correct.
- \* None of these answers are correct.
- \* The capital structure that maximizes stock price is also the capital structure, which maximizes earnings per share.
- \* The capital structure that maximizes stock price is also the capital structure, which maximizes the firm's times-interest-earned (TIE) ratio.
- \* The capital structure that maximizes stock price is also the capital structure, which minimizes the weighted average cost of capital (WACC).

That answer is incorrect.

Correct answer:

The capital structure that maximizes stock price is also the capital structure, which minimizes the weighted average cost of capital (WACC).

The capital structure which maximizes the firm's stock price generally calls for a debt ratio which is lower than the one that maximizes EPS. The firm could maximize its TIE by having no debt (i.e. zero interest payments). But, this capital structure would probably not maximize the firm's stock price.

-----  
The management of Clay Industries have adhered to the following capital structure: 50% debt, 45% common equity, and 5% perpetual preferred equity. The following information applies to the firm:

Before-tax cost of debt = 7.5%  
Combined state/federal tax rate = 35%  
Expected return on the market = 14.5%  
Annual risk-free rate of return = 5.25%  
Historical Beta coefficient of Clay Industries Common Stock = 1.15  
Annual preferred dividend = \$1.35  
Preferred stock net offering price = \$17.70  
Expected annual common dividend = \$0.45  
Common stock price = \$30.90  
Expected growth rate = 11.75%  
Subjective risk premium = 3.8%

Given this information, and using the Capital Asset Pricing Model to calculate the component cost of common equity, what is the Weighted Average Cost of Capital for Clay Industries?

- \* 15.31%

- \* 11.30%
- \* 9.92%
- \* 9.968%
- \* The WACC for Clay Industries cannot be calculated from the information.
- \* 10.05%

That answer is incorrect.

Correct answer:

9.968%

The calculation of the Weighted Average Cost of Capital is as follows:  $\{\text{fraction of debt} * [\text{yield to maturity on outstanding long-term debt}][1 - \text{combined state/federal income tax rate}]\} + \{\text{fraction of preferred stock} * [\text{annual dividend}/\text{net offering price}]\} + \{\text{fraction of common stock} * \text{cost of equity}\}$ . The cost of common equity can be calculated using three methods, the Capital Asset Pricing Model (CAPM), the Dividend-Yield-plus-Growth-Rate (or Discounted Cash Flow) approach, and the Bond-Yield-plus-Risk-Premium approach. In this example, you are asked to calculate the cost of common equity using the Capital Asset Pricing Model (CAPM). This approach involves the following equation:  $\{\text{risk-free rate} + \text{beta}[\text{expected return on the market} - \text{risk-free rate}]\}$ . Specifically, the calculation of the component cost of common equity using the CAPM is as follows:  $\{[5.25\% + 1.15(14.5\% - 5.25\%)]\} = 15.888\%$ . The after-tax cost of debt can be found by multiplying the yield to maturity on the firm's outstanding long-term debt (7.5%) by (1-tax rate). Using this method, the after-tax cost of debt is found as 4.875%. The calculation of the cost of perpetual preferred stock is relatively straightforward, simply divide the annual preferred dividend by the net offering price. Using this method, the cost of preferred stock is found as 7.627%. Incorporating these figures into the WACC equation gives the answer of 9.968%.

-----

The president of Real Time Inc. has asked you to evaluate the proposed acquisition of a new computer. The computer's price is \$40,000, and it falls into the MACRS 3-year class. Purchase of the computer would require an increase in net working capital of \$2,000. The computer would increase the firm's before-tax revenues by \$20,000 per year but would also increase operating costs by \$5,000 per year. The computer is expected to be used for 3 years and then be sold for \$25,000. The firm's marginal tax rate is 40 percent, and the project's cost of capital is 14 percent.

What is the net investment required at  $t = 0$ ?

- \* -\$36,600
- \* -\$40,000
- \* -\$38,600
- \* -\$42,000
- \* -\$37,600

That answer is incorrect.

Correct answer:

-\$42,000

Initial investment:

Cost	(\$40,000)
Change in NWC	(2,000)
	(\$42,000)



-----

Buchanan Brothers anticipates that its net income at the end of the year will be \$3.6 million (before any recapitalization). The company currently has 900,000 shares of common stock outstanding and has no debt. The company's stock trades at \$40 a share. The company is considering a recapitalization where it will issue \$10 million worth of debt at a yield to maturity of 10 percent, and use the proceeds to repurchase common stock. Assume the stock price remains unchanged by the transaction, and the company's tax rate is 34 percent. What will be the company's earnings per share if it proceeds with the recapitalization?

- \* \$4.52
- \* \$5.54
- \* \$2.23
- \* \$3.26
- \* \$2.45

That answer is correct!

After issuing the debt, the company can repurchase  $\$10,000,000/\$40 = 250,000$  shares leaving 650,000 shares outstanding. We still need to find the expected NI after issuing the debt. We're given the anticipated NI is \$3.6 million. Thus, the EBIT (before the debt issue) can be found as follows:  $\$3,600,000 = \text{EBIT}(1 - 0.34)$  or  $\text{EBIT} = \$5,454,545.45$ . The company will pay \$1,000,000 in interest after issuing the debt so the new EBT will be  $\$5,454,545.45 - \$1,000,000 = \$4,454,545.45$ . Also, the new NI figure will be:  $\$4,454,545.45(1 - 0.34) = \$2,940,000$ . Finally,  $\$2,940,000/650,000 = \$4.52$  is the EPS after the recapitalization.

-----

Which of the following choices correctly describes a project which will direct the operations of a company into a new market or functional niche, is primarily enacted to expand revenues, and one in which the firm does not have an existing proxy?

- \* Marginal project
- \* Extraordinary item
- \* Retrenchment project
- \* Replacement project
- \* Expansion project

That answer is incorrect.

Correct answer:

Expansion project

In an analysis of an expansion project, the relevant cash flows are those which apply wholly to the proposed project. There is no existing project whose cash flows must be incorporated into the analysis, as in the examination of a replacement project. "Marginal project" and "retrenchment project," are fictitious terms, and "extraordinary item" is an accounting classification referring to an event that is both unusual and nonrecurring.

-----

According to the Signaling Theory of capital structure, an increase in bankruptcy costs:

- \* increases the debt ratio of a firm.
- \* none of these answers.
- \* may or may not affect the debt ratio of a firm.
- \* decreases the debt ratio of a firm.

That answer is incorrect.

Correct answer:

may or may not affect the debt ratio of a firm.

The Signaling Theory of capital structure considers the decisions of a firm's manager to raise debt or equity capital as a function of the relative profitability prospects of the firm's projects. It does not use bankruptcy costs as an explanation of the debt ratios prevalent in various industries. Bankruptcy costs are used by the Trade-off Theory of capital structure.

-----

Projects A and B are mutually exclusive and will be repeated. The company's cost of capital is 12.5 percent.

t	Proj. A-Cash Flows	Proj. B-Cash Flows
0	- 10,000	- 10,000
1	+ 40,000	+ 30,000
2	+ 50,000	+ 30,000
3	+ 30,000	+ 30,000
4	+ 20,000	+ 30,000
5	-----	+ 30,000

What is the equivalent annual annuity (EAA) of the best project?

- \* \$24,227
- \* \$27,192
- \* \$32,811
- \* \$23,243
- \* \$35,000

That answer is incorrect.

Correct answer:

\$32,811

First find the NPV of each project, using the cash flow register:

Project A NPV = \$98,617.59.

Project B NPV = \$96,817.05.

Then find EAA:

Project A:

$N = 4; I = 12.5; PV = -98,617.59; FV = 0;$  solve for  $PMT = \$32,810.85.$

Project B:

$N = 5$ ;  $I = 12.5$ ;  $PV = -96,817.05$ ;  $FV = 0$ ; solve for  $PMT = \$27,191.46$ .

Project A has the higher EAA.

-----

Project A has an internal rate of return of 18 percent, while Project B has an internal rate of return of 16 percent. However, if the company's cost of capital (WACC) is 12 percent, Project B has a higher net present value. Which of the following statements is most correct?

- \* All of these answers are correct.
- \* The crossover rate for the two project is less than 12 percent.
- \* None of these answers are correct.
- \* Assuming that the two projects have the same scale, Project A probably has a faster payback than Project B.
- \* Assuming the timing of the two projects is the same, Project A is probably of larger scale than Project B.

That answer is incorrect.

Correct answer:

Assuming that the two projects have the same scale, Project A probably has a faster payback than Project B.

Draw out the NPV profiles of these two projects. As B's NPV declines more rapidly with an increase in discount rates, this implies that more of the cash flows are coming later on. Therefore, Project A has a faster payback than Project B.

-----

Dorrie James, a financial analyst with consulting firm Brown, Ketchuppe & Company, is trying to determine the earnings per share (EPS) figure for Floweration.com. Assume the following information:

Sales: \$4,500,000  
Fixed costs: \$2,000,000  
Variable costs: \$1,200,000  
Interest expense: \$40,000  
Tax rate: 35%  
Weighted Average Cost of Capital: 12.25%  
Beta coefficient: 1.25  
Common shares outstanding: 4,755,000

Using this information, what are the EPS for Floweration.com?

- \* \$0.1492
- \* \$0.1722
- \* \$0.1676
- \* \$0.2440
- \* \$0.2360
- \* The answer cannot be calculated from the information provided.

That answer is incorrect.

Correct answer:

\$0.1722

The EPS figure is perhaps the single most popular term in the field of conventional equity investments. Any glance into financial media and business periodicals will undoubtedly uncover numerous instances in which the EPS figure is cited. While quite popular and useful, many individuals do not understand the mechanics behind the EPS calculation, and an investigation into the components of EPS is a valuable learning experience. The EPS calculation is found by the following equation:

$$\{EPS = [(Sales - Fixed Costs - Variable Costs - Interest Expense)(1 - Tax Rate)] / [\# \text{ of Common Shares Outstanding}]\}$$

Additionally, the EPS figure can be found by:

$$\{EPS = [(EBIT - Interest Expense)(1 - Tax Rate) / \# \text{ of Common Shares Outstanding}]\}$$

Incorporating the given information into the first EPS equation will yield the following:  $\{EPS = [(\$4,500,000 - \$2,000,000 - \$1,200,000 - \$40,000)(1 - .35)] / 4,755,000\} = \$0.1722$

-----

In a particular country, suppose capital gains are taxed at 30% and realized income is taxed at 20%. The tax preference theory implies that as the dividend payout ratio is increased, the stock price:

- \* remains unaffected or decreases.
- \* decreases.
- \* remains unaffected.
- \* increases.

That answer is correct!

This is a tricky one! You must remember that the capital gains tax does not have to be paid until the gains are realized. Hence, the capital gains component keeps growing at a tax-deferred rate. On the other hand, taxes become payable immediately on dividends. Hence, the tax preference theory does not make a definite prediction when the capital gains tax is higher than the realized income tax.

-----

The following information applies to a company's preferred stock:

Current price \$101.00 per share  
Par value \$100.00 per share  
Annual dividend \$6.50 per share

The company issued the preferred stock at par and incurred a 10% floatation cost. If the company's marginal corporate tax rate is 34%, what is the after-tax cost of preferred stock?

- \* 4.3%
- \* 6.4%
- \* 13%
- \* 4.2%
- \* 6.5%
- \* 7.2%

That answer is incorrect.

Correct answer:

7.2%

The cost of preferred stock is calculated as the preferred stock dividend divided by the net issuing price. The dividend for this preferred stock is \$6.50, and the net issuing price was \$90.00. Thus the cost of preferred stock is 6.5 divided by 90 or 7.2%. There are no tax savings associated with the use of preferred stock, therefore no tax adjustments are made when calculating the cost.

-----

Consider the following information:

30-day treasury rate (Risk Free rate) 5.2%

Company XYZ Bond yield 12.2%

Beta 1.2

Risk Premium 4.5%

Credit Rating BBB

Calculate Company XYZ's cost of retained earnings using the Bond-Yield-plus-Risk-Premium approach.

- \* 21.9%
- \* 16.7%
- \* 12.2%
- \* 5.2%
- \* 20.4%
- \* 9.7%

That answer is incorrect.

Correct answer:

16.7%

To estimate a firm's cost of retained earnings using the Bond-Yield-plus-Risk-Premium approach, simply take the company's bond yield and add the risk premium. In this case the cost of retained earnings =  $12.2\% + 4.5\% = 16.7\%$ .

-----

Which of the following is not a cash flow that results from the decision to accept a project?

- \* Externalities.
- \* Shipping and installation costs.
- \* Opportunity costs.
- \* Changes in working capital.
- \* Sunk costs.

That answer is incorrect.

Correct answer:

Sunk costs.

Sunk cost is not a relevant cash flow.

-----

A stock split will cause a change in the total dollar amounts shown in which of the following balance sheet accounts?

- \* Retained earnings
- \* Cash
- \* None of these will change
- \* Paid-in capital
- \* Common stock

That answer is incorrect.

Correct answer:

None of these will change

If a stock rises above a specific amount, management may declare, for example, a two-for-one stock split, where the number of shares outstanding doubles and the stock price is halved. Each stockholder would have more shares, but each share is worth less. Theoretically, a stock split should not affect the value of the firm. They are generally used after a sharp price run-up to produce a large price reduction.

-----

Firm A has a low earnings volatility. An otherwise identical firm B has high volatility in earnings. Thus, firm A is likely to have \_\_\_\_\_ financial leverage than firm B.

- \* a higher
- \* a lower
- \* the same
- \* a higher or a lower (since the two are not related)

That answer is correct!

Firms with lower earnings volatility face a lower business risk. This allows them to have a higher appetite for debt. Consequently, firms with lower earnings volatility tend to have higher D/E ratios i.e. higher financial leverage.

-----

Consider the following information:

30 day T-Bill rate (Risk free rate) 7.2%  
Common Stock Beta 0.8  
Expected Rate of return for the market 15.0%  
Net Worth to Total Asset Multiple .25

Calculate this firm's cost of retained earnings using the CAPM approach.

- \* 7.2%
- \* 13.44%
- \* 12.0%
- \* 9.6%
- \* 22.2%
- \* 10.2%

That answer is incorrect.

Correct answer:

13.44%

To calculate the cost of retained earnings for a firm using CAPM, one may use the following formula: Cost of retained earnings = risk free rate + ((expected rate of return on the market - risk free rate) x Beta). In this case the cost of retained earnings = 7.2% + ((15.0% - 7.2%) x 0.8 = 13.44%.

-----

Lloyd Enterprises has a project, which has the following cash flows:

Year	Cash Flows
0	-\$200,000
1	50,000
2	100,000
3	150,000
4	40,000
5	25,000

The cost of capital is 10 percent. What is the project's discounted payback?

- \* 2.3333 years
- \* 1.8763 years
- \* 2.4793 years
- \* 2.0000 years
- \* 2.6380 years

That answer is incorrect.

Correct answer:

2.6380 years

	Discounted CF	Cumulative CF
0	-200,000.00	-200,000.00
1	45,454.55	-154,545.45
2	82,644.63	-71,900.82
Payback		
3	112,697.22	+40,796.40
4	27,320.54	+68,116.94
5	15,523.03	+83,639.97

Payback period = 2 years + (71,900.82/112,697.22) = 2.638 years.

-----  
A firm initially has no debt in its capital structure. As it starts increasing its debt, the stock price begins to rise because of \_\_\_\_\_. After a threshold, an increase in debt reduces the stock price due to \_\_\_\_\_.

- \* none of these answers
- \* higher leverage; higher probability of default
- \* tax deductions; expected default and bankruptcy costs
- \* lower cost of retained earnings; higher cost of debt

That answer is incorrect.

Correct answer:

tax deductions; expected default and bankruptcy costs

Debt offers tax shelter for income that equity does not since interest paid on debt is tax deductible. Therefore, as the firm starts adding debt to its capital structure in lieu of equity, the stock price starts rising. However, at a threshold debt-to-equity level, the higher probability of default offsets the value of the debt shield. Beyond this, addition of more debt reduces the stock price.

-----  
Ace Consulting, a multinational corporate finance consulting firm, is examining the operations of Minishabby Farms, an Irish conglomerate who is considering the development of a new distilling process for their specialty spirits division. In order to determine the feasibility of the new distilling process, Ace Consulting is trying to determine the beta of the proposed project. In their analysis, Ace Consulting begins by identifying publicly-traded companies whose operations are solely within the distilling business. Ace identifies four such firms, determines the beta of each Company, and averages them together. This figure is used as the beta of the proposed project. Which of the following techniques most correctly describes this method of identifying individual project betas?

- \* Monte Carlo simulation
- \* Empirical smoothing
- \* Accounting beta method
- \* Relational method
- \* Pure play method
- \* Case study analysis

That answer is incorrect.

Correct answer:

Pure play method

In this example, Ace Consulting has used the beta coefficient of four firms whose business is solely within the distilling process. These firms are "pure plays" in the distilling field. The Pure Play method of determining project betas is a popular technique in corporate finance, most likely due to its ease of use. However, the identification of "pure play" firms is often difficult for certain projects. In these cases, the second method of determining project betas is employed, the Accounting Beta method. "Monte Carlo simulation" is a method for evaluating stand-alone risk, and "empirical smoothing" is a fictitious term.

-----



If the firm is being operated so as to maximize shareholder wealth, and if our basic assumptions concerning the relationship between risk and return are true, then which of the following should be true?

- \* If the beta of the asset is greater than the corporate beta prior to the addition of that asset, then the corporate beta after the purchase of the asset will be smaller than the original corporate beta.
- \* If the beta of the asset is smaller than the firm's beta, then the required return on the asset is greater than the required return on the firm.
- \* None of these answers are true.
- \* If the beta of an asset is larger than the corporate beta prior to the addition of that asset, then the required return on the firm will be greater after the purchase of that asset than prior to its purchase.
- \* If the beta of the asset is larger than the firm's beta, then the required return on the asset is less than the required return on the firm.

That answer is incorrect.

Correct answer:

If the beta of an asset is larger than the corporate beta prior to the addition of that asset, then the required return on the firm will be greater after the purchase of that asset than prior to its purchase.

An increase in a project's beta will cause its stock price to decrease unless the increased beta were offset by a higher expected rate of return. Therefore, high-risk investments require higher rates of return, whereas low-risk investments require lower rates of return.

-----

A project has the following cash flows over the next 5 years: \$1,000, \$600, \$300, \$1,200 and \$1,400. Assume all cash flows occur at the end of a year. The project requires an initial cash outlay of \$2,900. The project's cost of capital is 8%. The discounted payback period for the project equals \_\_\_\_\_.

- \* 4.11 years
- \* 3.84 years
- \* 4.81 years
- \* 4.36 years

That answer is incorrect.

Correct answer:

4.36 years

The discounted payback period is defined as the expected number of years that would be required to recover the original investment using discounted cash flows. The discounted cash flow at the end of year N is obtained by dividing that year's cash flow by  $1.08^N$ , since the project's cost of capital is 8%. Using this, the discounted cash flows are: \$926, \$514, \$238, \$882 and \$953. Recovery occurs in the 5th year. At the beginning of the 5th year, the outstanding balance equals  $2,900 - 926 - 514 - 238 - 882 = \$340$ . Therefore, the discounted payback period =  $4 + 340/953 = 4.36$  years.

-----

Which of the following figures is not expressly incorporated into the Degree of Operating Leverage calculation based on unit sales?

- \* Average fixed cost per unit

- \* Average sales price per unit
- \* Variable cost per unit
- \* Fixed cost per unit
- \* Total fixed operating costs

That answer is correct!

The Degree of Operating Leverage (DOL) measures the percentage change in EBIT that results from a given change in sales. The DOL can be calculated using several methods, including one that is based on unit sales. This version of the DOL equation is as follows:

{DOL = [(Sales in units(average sales price - variable cost per unit) / (sales in units(average sales price - variable cost per unit) - total fixed operating costs)]}. Remember that in this DOL equation, "total fixed operating costs" is used in the denominator, rather than "average fixed cost per unit." Using average sales price per unit in the denominator would lead to nonsensical answers, and the logic behind this should become apparent through an examination of DOL, its mechanics, and components.

-----

Which of the following best describe the two basic conditions which cause NPV profiles to cross and thus conflicts to arise between NPV and IRR?

- \* Project scale differences, timing differences
- \* Timing differences, opportunity cost differences
- \* Project scale differences, existence of externalities
- \* Timing differences, implicit cost differences
- \* Project scale differences, diminishing returns differences

That answer is correct!

The two basic conditions which lead to conflicts in the analysis of mutually exclusive projects using NPV and IRR are differences in the timing of the cash flows of each project, and differences in the size, or "scale" of the projects. While "implicit cost differences" and "existence of externalities" are both attractive answers, they do not represent the best possible choices

-----

Which of the following statements is most correct?

- \* All else being equal, an increase in a firm's fixed costs will decrease its degree of operating leverage.
- \* All of these statements are correct.
- \* Firms that have large fixed costs and low variable costs have a higher degree of financial leverage than do firms with low fixed costs and high variable costs.
- \* If a firm's net income rises 10 percent every time its EBIT rises 10 percent, this implies the firm has no debt outstanding.
- \* None of these statements are correct.

That answer is incorrect.

Correct answer:

If a firm's net income rises 10 percent every time its EBIT rises 10 percent, this implies the firm has no debt outstanding.

If no debt were used, there will be no interest charges, which is included in net income but not EBIT.

-----

Gateway Inc. has a weighted average cost of capital of 11.5 percent. Its target capital structure is 55 percent equity and 45 percent debt. The company has sufficient retained earnings to fund the equity portion of its capital budget. The before-tax cost of debt is 9 percent, and the company's tax rate is 30 percent. If the expected dividend next period and current stock price are \$5 and \$45, respectively, what is the company's growth rate?

- \* 3.44%
- \* 8.16%
- \* 2.68%
- \* 4.64%
- \* 6.75%

That answer is incorrect.

Correct answer:

4.64%

Solve for  $k(s)$  (component cost of retained earnings or internal equity):

$WACC$  (Weighted Average Cost of Capital) = 11.5% =  $w(s)k(s) + w(d)k(d)(1 - T)$

$$11.5\% = 0.55k(s) + 0.45(0.09)(0.70)$$

$$k(s) = 15.75\%$$

Solve for  $g$ :  $k(s) = 15.75\% = D1/P0 + g$

$$15.75\% = \$5/\$45 + g$$

$$g = 4.64\%$$

-----

A project has the following cash flows over the next 5 years: \$1,000, \$600, \$300, \$1,200 and \$1,400. Assume all cash flows occur at the end of a year. The project requires an initial cash outlay of \$2,900. The project's cost of capital is 8%. The MIRR of the project equals \_\_\_\_\_.

- \* 11.54%
- \* 12.22%
- \* 9.92%
- \* 14.19%

That answer is incorrect.

Correct answer:

12.22%

The MIRR is defined as that rate which discounts the terminal value of the cash inflows to equate to the present value of a project's costs (using the project's cost of capital).

The present value of the costs = 2,900. The terminal value (future value at the end of year 5) of the project equals  $1,000 \cdot 1.084 + 600 \cdot 1.083 + 300 \cdot 1.082 + 1,200 \cdot 1.08 + 1,400 = 5,162$ . Note that this is calculated using the project's cost of capital. Then, MIRR satisfies  $2,900 = 5,162 / (1 + \text{MIRR})^5$ . Solving gives MIRR = 12.22%.

-----

Which of the following statements is most correct?

- \* The MIRR method will always arrive at the same conclusion as the NPV method.
- \* All of the statements are correct.
- \* The MIRR method can overcome the multiple IRR problem, while the NPV method cannot.
- \* None of the statements are correct.
- \* The MIRR method uses a more reasonable assumption about reinvestment rates than the IRR method.

That answer is incorrect.

Correct answer:

The MIRR method uses a more reasonable assumption about reinvestment rates than the IRR method.

MIRR and NPV can conflict for mutually exclusive projects if the projects differ in size. NPV does not suffer from the multiple IRR problem.

-----

Braun Industries is considering an investment project, which has the following cash flows:

t	Project Cash Flows
0	-\$1,000
1	400
2	300
3	500
4	400

The company's WACC is 10 percent. What is the project's payback, internal rate of return and net present value?

- \* Payback = 2.6, IRR = 24.12%, NPV = \$300.
- \* Payback = 2.6, IRR = 21.22%, NPV = \$260.
- \* Payback = 2.4, IRR = 21.22%, NPV = \$260.
- \* Payback = 2.6, IRR = 21.22%, NPV = \$300.
- \* Payback = 2.4, IRR = 10.00%, NPV = \$600.

That answer is incorrect.

Correct answer:

Payback = 2.6, IRR = 21.22%, NPV = \$260.

Payback =  $2 + 300/500 = 2.6$  years.

IRR:  $-1000 + 400/(1 + \text{IRR})^1 + 300/(1 + \text{IRR})^2 + 500/(1 + \text{IRR})^3 + 400/(1 + \text{IRR})^4 = 0$ : IRR = 21.22%.

NPV =  $-1000 + 400/(1 + 0.10)^1 + 300/(1 + 0.10)^2 + 500/(1 + 0.10)^3 + 400/(1 + 0.10)^4 = \$260.46$ .

-----  
Assume the following information concerning two mutually-exclusive projects:

Project A

Initial cash outflow \$350,000

Expected cash inflows

t1: \$55,000

t2: \$55,000

t3: \$100,000

t4: \$100,000

t5: \$100,000

Project B

Initial cash outflow \$350,000

Expected cash outflows

t1: \$100,000

t2: \$100,000

t3: \$100,000

t4: \$55,000

t5: \$55,000

Assuming no taxes, a \$0.00 salvage value at the end of year 5, and a 8.95% cost of capital, which of the following choices correctly illustrates the NPV of each project? Additionally, which of the two projects has the least sensitivity to changes in the cost of capital?

\* Project A NPV: (\$39,743.45); Project B NPV: (\$21,781.52); Project A has the least sensitivity to changes in the cost of capital

\* Project A NPV: \$39,743.95; Project B NPV: (\$21,781.52); project B has the least sensitivity to changes in the cost of capital

\* Project A NPV: (\$39,743.95); Project B NPV: (\$21,781.52); Project B has the least sensitivity to changes in the cost of capital

\* Project A NPV: (\$39,743.95); Project B NPV: \$21,781.52; Project A has the least sensitivity to changes in the cost of capital

\* Project A NPV: \$39,743.45; Project B NPV: \$15,890.15; Project A has the least sensitivity to changes in the cost of capital

That answer is correct!

In this example, project A is characterized as having the majority of its cash flows occurring in sooner periods, and is thus characterized as being less sensitive to changes in the cost of capital. Project A's NPV profile is less steep than project B's, whose largest cash flows occur during later periods.

-----  
The date on which if you are listed by the company as an owner, you will receive a dividend is known as the:

- \* Holder-of-Record Date
- \* Declaration Date
- \* Beneficiary Date
- \* Payment Date
- \* Ex-Dividend Date

That answer is correct!

The "Holder-of-Record Date" is the date on which if you are listed by the company as an owner, you will receive the dividend.

-----

Which of the following statements is most correct?

- \* The component cost of preferred stock is expressed as  $k(ps)(1 - T)$ , because preferred stock dividends are treated as fixed charges, similar to the treatment of debt interest.
- \* Due to the way the Marginal Cost of Capital (MCC) schedule is constructed, the first breakpoint in the MCC schedule must be associated with using up all available retained earnings and having to issue common stock.
- \* The cost of equity obtained by using retained earnings is generally regarded as being the rate of return stockholders require on the firm's outstanding common stock.
- \* The higher the firm's flotation cost for new common equity, the more likely the firm is to use preferred stock, which has no flotation cost.
- \* The bond-yield-plus-risk-premium approach to estimating a firm's cost of common equity involves adding a subjectively determined risk-premium to the market risk-free bond rate.

That answer is incorrect.

Correct answer:

The cost of equity obtained by using retained earnings is generally regarded as being the rate of return stockholders require on the firm's outstanding common stock.

Preferred stock dividends are not tax deductible; therefore, the component cost of preferred stock is only  $k(ps)$ . The risk premium in the bond-yield-plus-risk premium approach would be added to the firm's cost of debt, not the risk-free rate. The first break point does not have to be associated with retained earnings. It could be from other sources of funds such as debt. The choice between preferred stock or common equity financing depends on a number of factors, including required return, flotation costs, management's desired capital structure, etc.

-----

Regarding the net present value of a replacement decision, which of the following statements is false?

- \* The present value of the after-tax cost reduction benefits resulting from the new investment is treated as an inflow.
- \* The present value of depreciation expenses on the new equipment, multiplied by the tax rate, is treated as an inflow.
- \* An increase in net working capital is treated as an outflow when the project begins and as an inflow when the project ends.
- \* Any loss on the sale of the old equipment is multiplied by the tax rate and is treated as an outflow at  $t = 0$ .

\* The after-tax market value of the old equipment is treated as an inflow at  $t = 0$ .

That answer is incorrect.

Correct answer:

Any loss on the sale of the old equipment is multiplied by the tax rate and is treated as an outflow at  $t = 0$ .

Since the old equipment is sold at a loss which reduces taxable income, a tax savings is realized and is deducted from the investment outlay.

-----

In general, an airline has a \_\_\_\_\_ operating leverage and a \_\_\_\_\_ business risk compared to a retail food chain of similar size.

- \* higher, higher
- \* lower, higher
- \* lower, lower
- \* higher, lower

That answer is correct!

An airline has a much higher proportion of costs in fixed assets than a retail food chain. It thus has a high operating leverage, leading to higher business risk and volatility in ROE.

-----

The Global Advertising Company had net income after interest but before taxes of \$40,000 this year. The marginal tax rate is 40 percent, and the dividend payout ratio is 30 percent. The company can raise debt at a 12 percent interest rate. The last dividend paid by Global was \$0.90. Global's common stock is selling for \$8.59 per share, and its expected growth rate in earnings and dividends is 5 percent. If Global issues new common stock, the flotation cost incurred will be 10 percent. Global plans to finance all capital expenditures with 30 percent debt and 70 percent equity.

What is Global's cost of retained earnings?

- \* 10.33%
- \* 9.66%
- \* 12.22%
- \* 17.22%
- \* 16.00%

That answer is incorrect.

Correct answer:

16.00%

$k(s)$  (component cost of retained earnings) =  $\$.945/\$8.59 + 0.05 = 0.1600 = 16.00\%$ .

-----

Marcus Corporation currently sells 150,000 units a year at a price of \$4.00 a unit. Its variable costs are approximately 30 percent of sales, and its fixed costs amount to 50 percent of revenues at its current output level. Although fixed costs are based on revenues at the current output level, the cost level is fixed. What is Marcus's degree of operating leverage in sales dollars?

- \* 2.2
- \* 3.5
- \* 1.0
- \* 5.0
- \* 4.0

That answer is incorrect.

Correct answer:

3.5

Use the information provided and the formula for DOL in sales dollars:

$$\text{DOL}(s) = [(\$150,000 \times \$4.00) - 180,000] / [(\$150,000 \times \$4.00) - 180,000 - 300,000] = 3.5$$

-----

The Global Advertising Company had net income after interest but before taxes of \$40,000 this year. The marginal tax rate is 40 percent, and the dividend payout ratio is 30 percent. The company can raise debt at a 12 percent interest rate. The last dividend paid by Global was \$0.90. Global's common stock is selling for \$8.59 per share, and its expected growth rate in earnings and dividends is 5 percent. If Global issues new common stock, the flotation cost incurred will be 10 percent. Global plans to finance all capital expenditures with 30 percent debt and 70 percent equity.

What is the break point due to retained earnings being used up?

- \* \$17,000
- \* \$24,000
- \* \$10,000
- \* \$30,000
- \* \$56,000

That answer is incorrect.

Correct answer:

\$24,000

Calculate net income and retained earnings

EBT                \$40,000

Less: Taxes      \$16,000

NI                 \$24,000

$$\text{RE} = 0.70(\$24,000) = \$16,800.$$

Break point retained earnings:

$$\text{BP}(\text{RE}) = \$16,800 / 0.70 = \$24,000.$$



-----  
A firm's capital structure consists of 25% debt with a pre-tax cost of 7% and an after-tax cost of 4.9%. Common equity makes up 45% of the structure and the rest is made up of preferred equity. The preferred stock has a coupon of 8% and is currently trading at 84% of its par value. The required rate of return on the common stock is 16.2%. The firm's WACC is \_\_\_\_\_.

- \* 11.5%
- \* 10.92%
- \* 11.37%
- \* 11.90%

That answer is incorrect.

Correct answer:

11.37%

To get the WACC in this case, you need to have information on the cost of preferred stock. This is not necessarily equal to the coupon rate on the preferred equity. Rather, it is the discount rate,  $R$ , that equates the present value of the perpetual payments on the preferred equity to its current price. The price of a perpetuity that pays  $C$  per year, at a discount rate of  $R$ , equals  $C/R$ . In this problem, since the preferred stock is at 84% and pays 8% coupon, we have  $84\% = 8\%/R$ , giving  $R = 9.52\%$ .

Now, the interest payments on debt are tax-deductible but those on preferred equity are not. Hence, no tax adjustment is necessary for preferred stock but you must use after-tax cost of debt in WACC calculations. With this in mind,  $WACC = 0.25 \times 4.9\% + 0.45 \times 16.2\% + 0.3 \times 9.52\% = 11.37\%$ .

-----  
A project requires an initial outlay of 650. It also needs capital spending of 700 at the end of year 1 and 900 at the end of year 2. It has no revenues for the first 2 years but receives 1,200 in year 3, 1,600 in year 4 and 2,300 in year 5. The project's cost of capital is 10%. The discounted payback period equals \_\_\_\_\_.

- \* 2.26 years
- \* 4.02 years
- \* 3.19 years
- \* 3.46 years

That answer is incorrect.

Correct answer:

4.02 years

The cash flows of the project starting at the end of year 1 are:

-700, -900, +1,200, +1,600, +2,300

The discounted payback period is defined as the expected number of years that would be required to recover the original investment using discounted cash flows. The discounted cash flow at the end of year  $N$  is obtained by dividing that year's cash flow by  $1.1^N$ , since the project's cost of capital is 10%. Using this, the discounted cash flows are:

-636, -744, +902, +1,093, +1,428.

Recovery occurs in the 5th year. At the beginning of the 5th year, the outstanding balance equals  $650 + 636 + 744 - 902 - 1093 = 35$ . Therefore, the discounted payback period =  $4 + 35/1428 = 4.02$  years.

-----

O'Donnell Inc. has a cost of capital of 11.5 percent. The company has a project with the following cash flows:

Year	Cash flow
0	-\$200
1	235
2	-65
3	300

What is the project's modified internal rate of return (MIRR)?

- \* 28.15%
- \* 39.87%
- \* 40.15%
- \* 32.90%
- \* 36.27%

That answer is incorrect.  
Correct answer:  
32.90%

Step 1 Find the PV of the outflows:

$$\begin{aligned}CF(0) &= -200 \\CF(1) &= 0 \\CF(2) &= -65 \\I &= 11.5\end{aligned}$$

Solve for NPV = -\$252.28.

Step 2 Find the TV of the inflows by first finding their NPV and then finding the FV of the NPV:

$$\begin{aligned}CF(0) &= 0 \quad N = 3 \\CF(1) &= 235 \quad I = 11.5 \\CF(2) &= 0 \quad PV = -427.18 \\CF(3) &= 300 \quad PMT = 0 \\I &= 11.5 \quad \text{Solve for FV} = \$592.16.\end{aligned}$$

Solve for NPV = \$427.18.

Step 3 Calculate the MIRR by equating the PV of the outflows with the TV of the inflows:

$$\begin{aligned}N &= 3 \\PV &= -252.28 \\PMT &= 0 \\FV &= 592.16 \\ \text{Solve for } I &= 32.90\%.\end{aligned}$$

-----

A financial analyst is examining shares of Floweration.com, a sprawling Internet "dot com" company, in an attempt to evaluate the firm for possible investment. In her analysis, the financial analyst has determined the following information for the most recent fiscal year:

Sales \$2,250,000  
Total fixed cost \$1,300,000  
Total variable cost \$305,000  
Interest expense \$5,750  
EBIT \$645,000  
Amortization expense \$4,550

Given this information, what is the Degree of Total Leverage for Floweration.com?

- \* 2.843
- \* 3.064
- \* 1.731
- \* 3.488
- \* 3.043

That answer is incorrect.  
Correct answer:  
3.043

The Degree of Total Leverage (DTL) demonstrates how a given change in sales will impact a firm's EPS. The equation used for calculating the DTL is as follows:  $\frac{[\text{Sales} - \text{variable costs}]}{[\text{sales} - \text{variable costs} - \text{fixed costs} - \text{interest expense}]}$ . Incorporating the given values for these components into the DTL equation yields the following:  $\frac{[\text{Sales } \$2,250,000 - \text{variable costs } \$305,000]}{[\text{sales } \$2,250,000 - \text{variable costs } \$305,000 - \text{fixed costs } \$1,300,000 - \text{interest expense } \$5,750]} = 3.043$ .

While somewhat intuitively appealing, "EBIT" and "amortization expense" are not explicitly incorporated into the DTL equation.

-----

Davis Corporation is faced with two independent investment opportunities. The Corporation has an investment policy, which requires acceptable projects to recover all costs within 3 years. The Corporation uses the discounted payback method to assess potential projects and utilizes a discount rate of 10 percent. The cash flows for the two projects are:

Time	Project A	Project B
0	-100,000	-\$80,000
1	40,000	50,000
2	40,000	20,000
3	40,000	30,000
4	30,000	0

Which investment project(s) does the company invest in?

- \* Project B only.
- \* Project A only.
- \* Neither Project A or Project B.
- \* Project A and Project B.

That answer is correct!

The sum of the PVs of the  $t = 1$ ,  $t = 2$ , and  $t = 3$  cash flows at  $t = 0$  for Project A is \$99,474.08. Thus, the discounted payback period of Project A exceeds 3 years and Project A is not acceptable. The PVs of the  $t = 1$ ,  $t = 2$ , and  $t = 3$  cash flows at  $t = 0$  for Project B are \$45,454.55, \$16,528.93, and \$22,539.44, respectively. These PVs sum to \$84,522.92, which is greater than the cost of the project, indicating that the discounted payback period is less than 3 years. Thus, Project B will be undertaken.

-----

A firm currently has high business risk projects underway. If it takes on projects which will lower its overall business risk, the optimal debt ratio will \_\_\_\_\_, all else equal.

- \* increase
- \* not be affected
- \* decrease
- \* insufficient information

That answer is correct!

If the business risk of the firm is lowered, its borrowing costs will improve, leading to a higher optimal D/E ratio.

-----

Rollins Corporation is constructing its MCC schedule. Its target capital structure is 20 percent debt, 20 percent preferred stock, and 60 percent common equity. Its bonds have a 12 percent coupon, paid semiannually, a current maturity of 20 years, and sell for \$1,000. The firm could sell, at par, \$100 preferred stock, which pays a 12 percent annual dividend, but flotation costs of 5 percent would be incurred. Rollins' beta is 1.2, the risk-free rate is 10 percent, and the market risk premium is 5 percent. Rollins is a constant growth firm, which just paid a dividend of \$2.00, sells for \$27.00 per share, and has a growth rate of 8 percent.

The firm's policy is to use a risk premium of 4 percentage points when using the bond-yield-plus-risk-premium method to find  $k(s)$ . The firm's net income is expected to be \$1 million, and its dividend payout ratio is 40 percent. Flotation costs on new common stock total 10 percent, and the firm's marginal tax rate is 40 percent.

What is Rollins' cost of retained earnings using the bond-yield-plus-risk-premium approach?

- \* 16.6%
- \* 16.0%
- \* 16.9%
- \* 14.1%
- \* 13.6%

That answer is incorrect.

Correct answer:

16.0%

Cost of retained earnings (Bond yield plus risk premium approach):  $k(s) = 12.0\% + 4.0\% = 16.0\%$ .

-----

The opportunity costs of a project refer to:

- \* the costs already incurred in developing the project.
- \* none of these answers.
- \* the costs that would be incurred in one or more of mutually exclusive projects that are rejected in favor of the project selected.
- \* the costs incurred due to the effects of the project on the firm's other projects at hand.

That answer is incorrect.

Correct answer:

none of these answers.

The cash flows that could be earned if the assets were not used for the project but elsewhere are known as "opportunity costs." None of the given choices fits this definition. Note that the costs already incurred in developing the project are called "sunk costs," the costs incurred due to the effects of the project on the firm's other projects at hand are "externality" or "spill-over" costs. "The costs that would be incurred in one or more of mutually exclusive projects that are rejected in favor of the project selected" looks tempting but is not an opportunity cost.

-----

Green Grocers is deciding among two mutually exclusive projects. The two projects have the following cash flows:

Time	Project A Cash Flows	Project B Cash Flows
0	-\$50,000	-\$30,000
1	10,000	6,000
2	15,000	12,000
3	40,000	18,000
4	20,000	12,000

The company's cost of capital is 10 percent (WACC = 10%). What is the net present value (NPV) of the project with the highest internal rate of return (IRR)?

- \* \$7,090
- \* \$12,510
- \* \$8,360
- \* \$11,450
- \* \$15,200

That answer is incorrect.

Correct answer:

\$15,200

NPV(A) = \$15,200; IRR(A) = 21.3811%.  
NPV(B) = \$7,092; IRR(B) = 19.2783%.  
Project A has the highest IRR, so the answer is \$15,200.

-----

Dandy Product's overall weighted average required rate of return is 10 percent. Its yogurt division is riskier than average, its fresh produce division has average risk, and its institutional foods division has below-average risk. Dandy adjusts for both divisional and project risk by adding or subtracting 2 percentage points. Thus, the maximum adjustment is 4 percentage points. What is the risk-adjusted required rate of return for a low-risk project in the yogurt division?

- \* 8%
- \* 10%
- \* 14%
- \* 12%
- \* 6%

That answer is incorrect.  
Correct answer:  
10%

$$k(YD) = 10\% + 2\% = 12\%.$$

However, for a low-risk project, Dandy Product subtracts 2 percentage points. Therefore, the required rate of return is 10 percent.

$$k(YD, \text{Low risk project}) = 10\% + 2\% - 2\% = 10\%.$$

-----

Alvarez Technologies has sales of \$3,000,000. The company's fixed operating costs total \$500,000 and its variable costs equal 60 percent of sales, so the company's current operating income is \$700,000. The company's interest expense is \$500,000. What is the company's degree of total leverage (DTL)?

- \* 3.500
- \* 6.000
- \* 1.714
- \* 3.100
- \* 3.250

That answer is incorrect.  
Correct answer:  
6.000

$$\begin{aligned} \text{DTL} &= (S - VC)/(EBT - I) \\ &= (\$3,000,000 - \$1,800,000)/(\$700,000 - \$500,000) \\ &= 6. \end{aligned}$$

-----

Intelligent Semiconductor is considering issuing additional common stock. The current yield to maturity on the firm's outstanding senior long-term debt is 13%. The company's combined federal/state income tax is 35%. The risk-free rate of return is 5.6%, and the annual return on the broadest market index is expected to be 13.5%. Shares of Intelligent Semiconductor have a historical beta of 1.6. In the past, the firm has assumed a 265 basis point risk premium when calculating the cost of equity. What is the cost of equity for this proposed common stock issue using the Bond-Yield-plus-Risk-Premium approach?

- \* 15.65%
- \* 16.15%
- \* 18.24%
- \* 11.20%
- \* The cost of equity using the Bond-Yield-plus-Risk-Premium approach cannot be calculated from the information provided.

That answer is correct!

The cost of issuing common stock can be calculated using several methods, including the Bond-Yield-Plus-Risk-Premium approach, Discounted Cash Flow method, or by using the Capital Asset Pricing Model. In this example, you have been asked to calculate the cost of equity using the Bond-Yield-plus-Risk-Premium approach. This method is a rather ad hoc procedure used by finance professionals, and involves adding a subjective "risk premium" to the yield to maturity of the firm's outstanding debt. This approach should be used with a degree of caution, as the subjective nature of the procedure leaves significant room for variation in estimates. In using the Bond-Yield-Plus-Risk-Premium approach, a subjective risk premium is added to the yield to maturity of the firm's outstanding long-term debt, and the calculation of the correct answer in this case is as follows: {yield to maturity of the outstanding senior debt 13% + subjective risk premium 2.65%}=15.65%.

-----

A firm has just issued 6%, 10-year coupon bonds, which have a yield-to-maturity of 7.1%. The firm has old debt, which pays a coupon of 8%. The firm is in the 45% tax bracket. Its marginal after-tax cost of debt equals \_\_\_\_\_.

- \* 3.3%
- \* 3.2%
- \* 4.4%
- \* 3.9%

That answer is incorrect.  
Correct answer:  
3.9%

Since debt interest is tax-deductible, the after-tax cost of debt equals  $7.1\% \times (1 - 45\%) = 3.9\%$ . Note that you must use the yield-to-maturity of the new bonds while calculating the cost of debt since this is the rate at which interest expense is computed in maintaining the accounts. The coupon rate does not enter directly in this calculation (though it does matter since it affects the yield-to-maturity).

-----

Mid-State Electric Company must clean up the water released from its generating plant. The company's cost of capital is 10 percent for average projects, and that rate is normally adjusted up or down by 2 percentage points for high- and low-risk projects. Clean-up Plan A, which is of average risk, has an initial cost of -\$1,000 at Time 0, and its operating cost will be -\$100 per year for its 10-year life. Plan B, which is a high-risk project, has an initial cost of -\$300, and its annual operating cost over Years 1 to 10 will be -\$200. What is the proper PV of costs for the better project?

- \* -\$1,642.02
- \* -\$1,430.04
- \* -\$1,728.19
- \* -\$1,525.88
- \* -\$1,614.46

That answer is incorrect.

Correct answer:

-\$1,614.46

The first thing to note is that risky cash outflows should be discounted at a lower discount rate, so in this case we would discount the riskier Project B's cash flows at  $10\% - 2\% = 8\%$ . Project A's cash flows would be discounted at 10%.

Now we would find the PV of the costs as follows:

Project A	Project B
CF(0) = -1,000	CF(0) = -300
CF(1-10) = -100	CF(1-10) = -200
I = 10.0	I = 8.0

Solve for NPV = -\$1,614.46. Solve for NPV = -\$1,642.02.

Project A has the lower PV of costs. If Project B had been evaluated with a 12% cost of capital, its PV of costs would have been -\$1,430.04, but that would have been wrong.

-----

After getting her degree in marketing and working for 5 years for a large department store, Sally started her own specialty shop in a regional mall. Sally's current lease calls for payments of \$1,000 at the end of each month for the next 60 months.

Now the landlord offers Sally a new 5-year lease which calls for zero rent for 6 months, then rental payments of \$1,050 at the end of each month for the next 54 months. Sally's cost of capital is 11 percent. By what absolute dollar amount would accepting the new lease change Sally's theoretical net worth?

- \* \$4,681.76
- \* \$3,803.06
- \* \$4,299.87
- \* \$3,243.24
- \* \$2,810.09

That answer is incorrect.

Correct answer:

\$3,803.06

CF(0) = 0



CF(1-6) = 0  
CF(7-60) = 1,050  
 $I = 11/12 = 0.9167$   
Solve for NPV =  $-\$42,189.97$ .

Therefore, the PV of payments under the proposed lease would be less than the PV of payments under the old lease by  $\$45,993.03 - \$42,189.97 = \$3,803.06$ . Sally should accept the new lease because it would raise her theoretical net worth by  $\$3,803.06$ .

-----  
In comparing two mutually exclusive projects of equal size and equal life, which of the following statements is most correct?

- \* None of these answers are correct.
- \* The project with the higher NPV may not always be the project with the higher IRR.
- \* The project with the higher NPV may not always be the project with the higher MIRR.
- \* The project with the higher IRR will always be the project with the higher MIRR.
- \* All of the answers are correct.

That answer is incorrect.

Correct answer:

The project with the higher NPV may not always be the project with the higher IRR.

Due to reinvestment rate assumptions, NPV and IRR can lead to conflicts; however, there will be no conflict between NPV and MIRR if the projects are equal in size (which is one of the assumptions in this question).

-----  
The Ace Company is considering investing in a piece of property, which costs \$105,000. The property will return a constant cash flow forever. If the firm's cost of capital is 9 percent and the corporate tax rate is 40 percent, what is the minimum after-tax cash flow that would make the investment acceptable to Ace?

- \* \$2,375
- \* \$15,942
- \* \$5,000
- \* \$10,831
- \* \$9,450

That answer is incorrect.

Correct answer:

\$9,450

$\$105,000 = CF(AT)/0.09$ ;  $CF(AT) = \$9,450$ .

-----  
The percentage mix of debt, preferred stock, and common equity that will maximize a firm's stock price is

known as:

- \* Marginal cost of capital
- \* Weighted average cost of capital (WACC)
- \* After tax cost of capital
- \* Marketed to market value of equity
- \* Target (Optimal) Capital Structure

That answer is incorrect.

Correct answer:

Target (Optimal) Capital Structure

The target or optimal capital structure of a firm is that percentage mix of debt, preferred stock, and common equity that will maximize the firm's stock price.

-----

Which of the following is false?

- \* The IRR rule is not dependable when applied to projects with non-normal cash flows.
- \* For independent projects with normal cash flows, the IRR and NPV rules give the same accept/reject results.
- \* For mutually exclusive projects, the IRR and NPV rules can give conflicting results.
- \* None of these answers.

That answer is incorrect.

Correct answer:

None of these answers.

Remember to always use the NPV result. There are quite a few problems with using other decision rules like IRR and payback period.

-----

Calculate the cost of debt for the following firm:

Borrowing Rate 9.5%  
Historical Beta .97  
Marginal Tax Rate 40%  
Credit Rating BB+  
Owner's Equity 15%  
Quick Ratio 1.7  
EPS \$1.70  
P/E ratio 12  
Estimated Dividends \$.30

- \* 8.075%
- \* 6.27%
- \* 1.43%
- \* 5.7%
- \* 1.5%

\* 9.5%

That answer is incorrect.

Correct answer:

5.7%

The cost of debt is simply the rate of borrowing less the tax savings. Due to the fact that interest expense is tax deductible, the cost of debt in this case is  $9.5\%(1 - .4) = 9.5\%(.6) = 5.7\%$ .

-----

Bell Brothers has \$3,000,000 in sales. Its fixed costs are estimated to be \$100,000, and its variable costs are equal to fifty cents for every dollar of sales. The company has \$1,000,000 in debt outstanding at a before-tax cost of 10 percent. If Bell Brothers' sales were to increase by 20 percent, how much of a percentage increase would you expect in the company's net income?

\* 15.66%

\* 18.33%

\* 19.24%

\* 23.08%

\* 21.50%

That answer is incorrect.

Correct answer:

23.08%

Step 1 Find Degree of Total Leverage (DTL)

$DTL = (S-VC)/(S-VC-F-I) = (\$3,000,000-\$1,500,000)/(\$3,000,000-\$1,500,000-\$100,000-\$100,000) = 1.1538$ .

Step 2 Find percentage increase in net income:

$\%Change\ NI = (0.20)(DTL) = (0.20)(1.1538) = 0.2308 = 23.08\%$ .

-----

A firm is considering a project whose estimated cash flows have indicated a payback period of 3.68 years. It requires an initial outlay of \$1,000 and has end-of-year cash flows of \$350, \$270 and \$225 in the first 3 years. The firm's marginal discount rate is 9%. The project's projected cash flow for year 4 equals

\_\_\_\_\_.

\* 373

\* 514

\* 495

\* 228

That answer is incorrect.

Correct answer:

228

The payback period is defined as the expected number of years that would be required to recover the original investment. In particular,

Payback period = Years before full recovery + (unrecovered cost at the start of payback year)/(net cash flow in the payback year)

In this case, the recovery occurs in the 3rd year. At the beginning of the 3rd year, the unrecovered cost equals  $1,000 - 350 - 270 - 225 = 155$ . If total cash flow in the 4th year equals C, then payback period =  $3 + 155/C = 3.68$  years. Solving for C gives  $C = 228$ . Note that the discount rate does not figure in the calculation of payback period.

-----

A firm has a target dividend payout ratio of 36% and net income of \$1.7 million. It is committed to maintaining an optimal capital structure consisting of 63% debt and 37% equity. The firm is in the 40% tax bracket. Its retained earnings breakpoint equals \_\_\_\_\_.

- \* \$1.89 million
- \* \$2.58 million
- \* \$1.31 million
- \* \$2.75 million
- \* \$2.94 million
- \* \$3.41 million
- \* \$4.64 million

That answer is incorrect.

Correct answer:

\$2.94 million

The retained earnings breakpoint refers to the maximum amount of capital that can be raised using retained earnings, assuming a constant capital structure and dividend payout ratio. In other words, it is the maximum amount of capital that can be raised without increasing the marginal cost of capital. In the present example, the maximum internal equity capital equals  $1.7 * 0.64 = \$1.088$  million. To maintain a D/E ratio of  $63/37 = 1.7$ , the amount of debt to be issued equals  $1.088 * 1.7 = \$1.85$  million. Therefore, earnings break-point equals  $(1.088 + 1.85)$  million = \$2.938 million.

-----

You have been asked by the president of your company to evaluate the proposed acquisition of a new special-purpose truck. The truck's basic price is \$50,000, and it will cost another \$10,000 to modify it for special use by your firm. The truck falls into the MACRS three-year class, and it will be sold after three years for \$20,000. Use of the truck will require an increase in net working capital (spare parts inventory) of \$2,000. The truck will have no effect on revenues, but it is expected to save the firm \$20,000 per year in before-tax operating costs, mainly labor. The firm's marginal tax rate is 40 percent.

What is the operating cash flow in Year 1?

- \* \$19,920
- \* \$17,820
- \* \$21,737
- \* \$20,121
- \* \$18,254

That answer is correct!

Depreciation schedule:

Depreciable basis = \$60,000.

Year	MACRS Percent	Depreciable Basis	Depreciation
1	0.33	\$60,000	\$19,800
2	0.45	60,000	27,000
3	0.15	60,000	9,000
4	0.07	60,000	4,200

Operating cash flows:

	Year	1	2	3
1) Before-tax cost reduction		\$20,000	\$20,000	\$20,000
2) After-tax cost reduction (line 1 x 0.6)		12,000	12,000	12,000
3) Depreciation		19,800	27,000	9,000
4) Tax savings from deprec. (line 3 x 0.4)		7,920	10,800	3,600
5) Net operating CFs		\$19,920	\$22,800	\$15,600

-----  
A project has a high correlation with the firm's other projects. It also has a low CAPM beta. The project will have \_\_\_\_\_ corporate risk and \_\_\_\_\_ market risk.

- \* high; high
- \* high; low
- \* low; low
- \* low; high

That answer is incorrect.

Correct answer:

high; low

Corporate risk measures the impact of a project on the corporate earnings while market risk measures its effect on the systematic risk of the stock. Since the project's returns are highly correlated with those of the firm's other projects, it will increase the earnings volatility. At the same time, due to low beta, the project will have a low market risk.

-----  
Which of the following statements is most correct?

- \* If it could be demonstrated that a clientele effect exists, this would suggest that firms could alter their dividend payment policies from year to year to take advantage of investment opportunities without having to worry about the effects of changing dividends on capital costs.
- \* Each of these statements are false.
- \* If a company raises its dividend by an unexpectedly large amount, the announcement of this new and

higher dividend is generally accompanied by an increase in the stock price. This is consistent with the bird-in-the-hand theory, and Modigliani and Miller used these findings to support their position on dividend theory.

\* If the dividend irrelevance theory (which is associated with the names Modigliani and Miller) were exactly correct, and if this theory could be tested with "clean" data, then we would find, in a regression of dividend yield and capital gains, a line with a slope of -1.0.

\* The tax preference and bird-in-the-hand theories lead to identical conclusions as to the optimal dividend policy.

That answer is incorrect.

Correct answer:

If the dividend irrelevance theory (which is associated with the names Modigliani and Miller) were exactly correct, and if this theory could be tested with "clean" data, then we would find, in a regression of dividend yield and capital gains, a line with a slope of -1.0.

The main conclusion of MM's irrelevance theory is that dividend policy does not affect the required rate of return on equity. MM theorized that  $k(s)$  is independent of dividend policy, implying that investors are indifferent between dividends and capital gains.

-----

Which of the following statements is most correct?

\* The optimal capital structure simultaneously maximizes EPS and minimizes the WACC.

\* As a rule, the optimal capital structure is found by determining the debt-equity mix that maximizes expected EPS.

\* The optimal capital structure minimizes the cost of equity, which is a necessary condition for maximizing the stock price.

\* All of these statements are false.

\* The optimal capital structure simultaneously minimizes the cost of debt, the cost of equity, and the WACC.

That answer is incorrect.

Correct answer:

All of these statements are false.

The optimal capital structure is the one that maximizes the price of the firm's stock, and minimizes the firm's WACC.

-----

Foundation Systems, a software engineering company, is considering the acceptance of two mutually exclusive projects. Assume the following information:

Project A

Initial cash outlay (\$40,000)

t1: \$8,000

t2: \$14,000

t3: \$13,000

t4: \$12,000

t5: \$11,000

t6: \$10,000  
cost of capital is 11.5%

Project B  
Initial cash outlay (\$20,000)  
t1: \$7,000  
t2: \$13,000  
t3 \$12,000  
cost of capital is 11.5%

Assuming no taxes, a \$0.00 salvage value at the end of each project, and the fact that both projects can be replicated identically at the end of their lives, which is the superior project according to the Common Life approach? Additionally, what is the NPV of the superior project over the common life?

- \* Project A, NPV \$7,165.11
- \* Project A, NPV \$9,280.90
- \* The Common Life approach cannot be applied to these two projects, due to the fact that the projects share unequal lives.
- \* Project B, NPV \$9,280.90
- \* Project B, NPV \$5,391.49

That answer is incorrect.  
Correct answer:  
Project B, NPV \$9,280.90

The Common Life, or "Replacement Chain" approach is a method which allows two projects with differing lives to be compared on the basis of NPV or IRR. In analyzing two or more projects using the Common Life approach, the two projects are multiplied in such a way that each comprises the same amount of time periods. In this example, you are provided with one project that is three periods long, and another which is six periods. By multiplying the three-period project by two, then we are able to formulate a situation in which both projects share a "common life." The calculation of the NPV for Project B assumes the following series of cash flows:

t0: (\$20,000)  
t1: \$7,000  
t2: \$13,000  
t3: [\$12,000 + (\$20,000)] = (\$8,000)  
t4: \$7,000  
t5: \$13,000  
t6: \$12,000

During t3, the project is "replaced," and the \$12,000 inflow is offset by the (\$20,000) required to implement the project once again. Incorporating this series of cash flows into your calculator will yield a NPV of \$9,280.90 for project B, and this is higher than the NPV of \$7,165.11 for project A.

-----

Which of the following are objectives of conducting a post audit? Choose the best answer.

- I. Identifying arbitrage opportunities
- II. Improving forecasts
- III. Identifying expansion opportunities
- IV. Improve operations
- V. Adhering to governmental guidelines for performance presentation

- \* I, II, V
- \* I, II, III, IV
- \* I, II, VII
- \* II, IV
- \* I, II, III, IV, V
- \* I, III, IV

That answer is incorrect.  
 Correct answer:  
 II, IV

The post-audit is an important aspect of the capital budgeting process, and involves two steps. Specifically, the post audit involves comparing actual results with forecasted results and determining why any differences exist. There are numerous specific reasons why companies conduct post-audits, but these reasons can be assimilated into two main objectives. Specifically, the objectives of the post-audit are to improve forecasting capacity and improve operations.

-----

In an investigation of Clay Industries, Marcus Litton, a financial analyst, has determined the following information:

Sales: \$300,000,000  
 Fixed costs: \$100,000,000  
 Variable costs: \$115,200,000  
 Interest expense: \$1,800,000  
 Tax rate: 35%  
 Weighted Average Cost of Capital: 10.15%  
 Beta coefficient: 0.80  
 Common shares outstanding: 10,000,000

Mr. Litton has asked for your assistance in determining the earnings per share (EPS) of Clay Industries. Using this information, which of the following answers correctly illustrates this EPS calculation?

- \* \$2.91
- \* \$6.17
- \* \$6.80
- \* The EPS figure cannot be completely determined from the information provided.
- \* \$4.90
- \* \$5.40

That answer is incorrect.  
 Correct answer:  
 \$5.40

The EPS figure is perhaps the single most popular term in the field of conventional equity investments. Any glance into financial media and business periodicals will undoubtedly uncover numerous instances in which the EPS figure is cited. While quite popular and useful, many individuals do not understand the mechanics behind the EPS calculation, and an investigation into the components of EPS is a valuable learning experience. The EPS calculation is found by the following equation:

$$\{EPS = [(Sales - Fixed Costs - Variable Costs - Interest Expense)(1 - Tax Rate)] / \# \text{ of Common Shares}$$



Outstanding]]}

Additionally, the EPS figure can be found by:

{EPS = [(EBIT - Interest Expense)(1 - Tax Rate) / # of Common Shares Outstanding]}

Incorporating the given information into the first EPS equation will yield the following:

{EPS = {[((\$300,000,000 - \$100,000,000 - \$115,200,000 - \$1,800,000)(1 - 0.35)] / 10,000,000}} = \$5.40.

-----

Howell Enterprises is forecasting EPS of \$4.00 per share for next year. The firm has 10,000 shares outstanding, it pays 12 percent interest on its debt, and it faces a 40 percent marginal tax rate. Its estimated fixed costs are \$80,000 while its variable costs are estimated at 40 percent of revenue. The firm's target capital structure is 40 percent equity and 60 percent debt and it has total assets of \$400,000. On what level of sales is Howell basing its EPS forecast?

- \* \$105,280
- \* \$292,444
- \* \$1,000,000
- \* \$480,400
- \* \$316,722

That answer is incorrect.

Correct answer:

\$292,444

EPS = (Sales - Fixed costs - Variable costs - Interest)(1 - T)/Shares outstanding.

Step 1 Calculate interest expense

Debt = 0.60 x \$400,000 = \$240,000.

Interest = 0.12 x \$240,000 = \$28,800.

Step 2 Solve for Sales (S)

$$\begin{aligned} \text{EPS} &= \$4.00 = (S - 0.40S - \$80,000 - \$28,800) \times (1 - 0.40) / 10,000 \\ &= (0.60S - \$108,800)(0.6) / 10,000 \\ \$4.00 &= (0.36S - \$65,280) / 10,000 \\ \$105,280 &= 0.36S \\ \text{Sales} &= \$292,444.44. \end{aligned}$$

Alternative method

EPS = (EBIT - Interest)(1 - T)/Shares outstanding.

Solve for EBIT

Net Income = EPS x Shares outstanding = \$4.00 x 10,000 = \$40,000.

EBT = NI / (1 - T) = \$40,000 / (0.6) = \$66,667.

Interest (from above) = \$28,800.

EBIT = EBT + Interest = \$66,667 + \$28,800 = \$95,467.

$$S = 0.40S + \$95,467 + \$80,000$$

0.6S = \$175,467

$$S = \$175,467 / 0.6 = \$292,445.$$

-----  
An increase in the tax rate \_\_\_\_\_ the optimal debt-to-equity ratio. It \_\_\_\_\_ the after-tax cost of debt. Assume all else equal.

- \* this answer cannot be generated because "tax" is not a factor in the optimal debt-to-equity ratio
- \* increases; increases
- \* this answer cannot be generated because "tax" is not a factor in after-tax cost of debt
- \* decreases; increases
- \* increases; decreases
- \* decreases; decreases

That answer is incorrect.

Correct answer:

increases; decreases

Since interest payments are tax deductible, higher tax rates make debt more attractive relative to equity, increasing the optimal D/E ratio. The after-tax cost of debt decrease, assuming that the pre-tax cost of debt is not affected by the change in the tax rate (in reality, it could increase due to decreased profitability of the firm and the resultant decrease in its solvency).

-----  
The internal rate of return of a capital investment

- \* changes when the cost of capital changes.
- \* must exceed the cost of capital in order for the firm to accept the investment.
- \* is equal to the annual net cash flows divided by one half of the project's cost when the cash flows are an annuity.
- \* all of the answers are correct.

That answer is incorrect.

Correct answer:

must exceed the cost of capital in order for the firm to accept the investment.

The IRR is calculated by finding the discount rate that equates the present value of future cash inflows to the project's cost. The IRR is the project's expected rate of return. If the IRR exceeds the cost of the funds used to finance the project, a surplus accrues. Thus, accepting a project whose IRR exceeds its cost of capital increases shareholder wealth.

-----  
A stock has a beta of 1.1 and the risk-free rate is 5.5%. Its dividend growth rate is 4.1% and the dividend payout ratio is 38%. If the market risk premium is 7.3%, the P/E ratio of the stock equals \_\_\_\_\_.

- \* 7.19
- \* 6.73
- \* 3.86
- \* 4.03

That answer is incorrect.

Correct answer:

4.03

The required rate of return on the stock can be found using CAPM, which gives

$R_{\text{stock}} = k = R_f + \beta(R_m - R_f) = 5.5\% + 1.1 \times 7.3\% = 13.53\%$ .

Therefore,  $P_0/E_1 = \text{dividend payout}/(k - g) = 0.38/(0.1353 - 0.041) = 4.03$ .

-----

A financial analyst with Mally, Feasance & Company is examining shares of Intelligent Semiconductor. Assume the following information.

Retention Rate: 80%

EPS: \$3.98

Growth Rate: 17%

Discount Rate: 12.35%

Tax Rate: 35%

Using this information, what is the ROE for Intelligent Semiconductor?

\* 12.11%

\* 13.60%

\* 2.72%

\* 66.40%

\* 21.25%

\* The answer cannot be determined from the information provided.

That answer is incorrect.

Correct answer:

21.25%

To determine the ROE for Intelligent, the equation used to determine the growth rate must be manipulated. The dividend growth rate equation to be used is originally structured as follows:

$\{g = \text{ROE}(1 - \text{Dividend Payout Ratio})\}$

The original equation must be rearranged using algebra, and will yield the following:

$\{\text{ROE} = g / \text{Retention Rate of Dividends}\}$

Imputing the given information into this equation will yield the following:  $\{\text{ROE} = 0.17 / 0.80\}$ . Solving for ROE will yield a figure of 21.25%.

As you can see, neither the discount rate or tax rate is incorporated into the equation. Additionally, remember that  $(1 - \text{Dividend Payout Ratio})$  is the same thing as the retention rate of dividends.

-----

Projects L and S each have an initial cost of \$10,000, followed by a series of positive cash inflows. Project L has total, undiscounted cash inflows of \$16,000, while S has total undiscounted inflows of \$15,000.

Further, at a discount rate of 10 percent, the two projects have identical NPVs. Which project's NPV will be more sensitive to changes in the discount rate?

- \* Both projects are equally sensitive to changes in the discount rate since their NPVs are equal at all costs of capital.
- \* Neither project is sensitive to changes in the discount rate, since both have NPV profiles which are horizontal.
- \* Project S.
- \* The solution cannot be determined unless the timing of the cash flows is known.
- \* Project L.

That answer is incorrect.

Correct answer:

Project L.

The NPV profile plots a project's NPV against the discount rates. The higher the undiscounted inflows, the steeper the NPV profile, and the steeper the NPV profiles, the more sensitive the project is to discount rate changes.

-----

Alabama Pulp Company (APC) can control its environmental pollution using either "Project Old Tech" or "Project New Tech." Both will do the job, but the actual costs involved with Project New Tech, which uses unproved, new state-of-the-art technology, could be much higher than the expected cost levels. The cash outflows associated with Project Old Tech, which uses standard proven technology, are less risky--they are about as uncertain as the cash flows associated with an average project. APC's cost of capital for average risk projects is normally set at 12 percent, and the company adds 3 percent for high risk projects but subtracts 3 percent for low risk projects. The two projects in question meet the criteria for high and average risk, but the financial manager is concerned about applying the normal rule to such cost-only projects. You must decide which project to recommend, and you should recommend the one with the lower PV of costs. What is the PV of costs of the better project?

Cash Outflows

Years:	0	1	2	3	4	
Project New Tech		1,500	315	315	315	315
Project Old Tech		600	600	600	600	600

- \* 2,399
- \* 2,521
- \* 2,457
- \* 2,422
- \* 2,543

That answer is incorrect.

Correct answer:

2,422

Recognize that (1) risky outflows must be discounted at lower rates, and (2) since Project New Tech is risky, it must be discounted at a rate of 12% - 3% = 9%. Project Old Tech must be discounted at 12%.

Tabular solution:

$$PV(\text{New Tech}) = -\$1,500 - \$315(PVIFA9\%,4) = -\$1,500 - \$315(3.2397) = -\$2,520.51.$$

$PV(\text{Old Tech}) = -\$600 - \$600(PVIFA_{12\%,4}) = -\$600 - \$600(3.0373) = -\$2,422.38.$

PV(Old Tech) is a smaller outflow than NPV(New Tech), thus, Project Old Tech is the better project.

-----

Intelligent Semiconductor is considering the development of a new data storage medium, which will allow tremendous increases in the efficiency of its customer's high-end server lines. The development of the new system will take place in the firm's existing facilities, and the storage costs for the additional equipment are expected to be residual in nature. The following information applies to this project:

Rent expense for the firm's existing facilities (\$10,500)

Initial cash outlay (\$50,000)

t1: \$15,000

t2: \$11,000

t3: \$11,000

t4: \$15,000

t5 (\$10,000)

t6 (\$10,000)

t7 \$25,000

Discount rate: 9%

Assuming no taxes or related charges, that the initial cash outlay does not include any sunk costs, and a \$0.00 salvage value at t7, what is the MIRR of this project?

\* 7.262%

\* 6.231%

\* None of these answers

\* 12.461%

\* This problem has more than one MIRR

\* 14.606%

That answer is correct!

In this example, you are asked to calculate the Modified Internal Rate of Return for a project. In calculating the MIRR for this project, the rent cost of \$10,500 is ignored because this expense represents a sunk cost. Remember that sunk costs are irrelevant in capital budgeting decisions, and should not be incorporated into the calculation. This is due to the fact that sunk costs are not incremental in nature, and are not directly related to the acceptance of the project in question, i.e. these costs have already been incurred or have been earmarked for payment. The following illustration details the calculation of the Terminal Value (TV) for the MIRR calculation in this case:  $\{[\$15,000 * 1.6771] + [11,000 * 1.53862] + [11,000 * 1.41158] + [\$15,000 * 1.29503] + [\$25,000 * 1]\} = TV \$102,034.15$ . The calculation of the present value of the cash outflows is found by discounting the cash outflows of periods 5 and 6 and adding them to the initial cash outlay as follows:  $\{-\$50,000 + [-\$10,000/1.53862] + [-\$10,000/1.6771]\} = PV \text{ of cash outflows } (\$62,462.00)$ . Incorporating these figures into your calculator's cash flow worksheet will yield the MIRR of 7.2623%. The calculation is found by the following:  $PV = (\$62,462.00)$ ,  $FV = \$102,034.15$ ,  $PMT = 0$ ,  $N = 7$ ,  $CPT I/Y \rightarrow 7.2623\%$ .

The modified IRR has a significant advantage over the regular IRR, in the fact that MIRR assumes cash flows from all projects are reinvested at some explicit rate, while the regular IRR assumes that all cash flows are reinvested at the project's IRR. This allows for much greater flexibility.

-----

In examining the beta for its machine tools division, the management of Clay Industries has regressed the division's ROA against that of the S&P 500. Which of the following best characterizes this method of calculating project beta?

- \* None of these answers
- \* Project Beta Method
- \* Monte Carlo Regression
- \* Pure Play Method
- \* Regression of the Poisson Distribution
- \* Accounting Beta Method

That answer is incorrect.

Correct answer:

Accounting Beta Method

In this example, the management of Clay Industries has determined the Beta coefficient for its machine tools division using the Accounting Beta Method. In using the Accounting Beta Method, the monthly (or quarterly) ROE or ROA of a specific division/project is compared to that of a large group of firms. This "large group of firms" is frequently characterized by a major market index, such as the S&P 500 or the Wilshire 5000. The Accounting Beta Method is used more frequently than the Pure Play Method, primarily because it is often difficult to find "pure-play" firms.

-----

Ludicrous Telecom, an international telecommunications company, has recently announced its plans to issue additional common stock. The company has been publicly traded for over 25 years, and currently has a capital structure consisting of 35% debt, 55% equity, and 10% preferred stock. This is the first time since its initial public offering that the company has announced its intention to issue common stock.

According to the Signaling Theory, this announcement should be viewed as which of the following? Choose the best answer.

- \* Bullish, because the company will be provided with additional capital from the share offering.
- \* Bullish, because it indicates superior investment prospects for the firm.
- \* Bullish, because it indicates a shift toward a more conservative capital structure.
- \* Bearish, because it indicates poor investment prospects for the firm.
- \* Bearish, because it indicates a shift toward a more radical capital structure.
- \* The signaling theory would not apply to this announcement.

That answer is incorrect.

Correct answer:

Bearish, because it indicates poor investment prospects for the firm.

According to the Signaling Theory, the management of companies send implicit signals to investors by their capital budgeting decisions. Believers of this theory feel that corporate managers have access to superior information, and are allowed to exploit this information asymmetry through their capital budgeting decisions. According to the signaling theory, when investment prospects are good, companies will prefer to raise capital first by using internally generated funds, i.e. retained earnings and marketable securities investments. If this source of capital is unavailable, then companies will prefer to issue debt rather than

common or preferred equity. The reasoning behind this is the fact that by raising debt, the company will not dilute the ROE figure, which is expected to be high due to favorable investment prospects. In contrast, when investment prospects are poor, the Signaling Theory states that companies will prefer to raise funds first by issuing common equity. The reasoning behind this is the fact that by issuing additional equity when investment prospects are poor, companies will be able to "spread the losses" amongst a greater pool of investors, thereby lessening the overall negative effect.

In this example, the management of Ludicrous Telecom have announced their intention on issuing additional common equity, and the Signaling Theory would state that this is sending a bearish signal as to the investment prospects of the firm.

-----

Which of the following conditions are necessary for the IRR and NPV calculations to produce similar ranking decisions. Choose the best possible answer.

- \* Projects must have equal lifespans, projects must be of equal scale
- \* Projects must be independent, have equal lifespans, and must be equal in scale
- \* Projects must be of equal size and have equal life, and must have normal cash flows
- \* Projects must have equal lifespans, projects must have normal cash flows
- \* Projects must be mutually exclusive, have equal lifespans, and must be of equal scale

That answer is incorrect.

Correct answer:

Projects must be of equal size and have equal life, and must have normal cash flows

When examining mutually-exclusive projects with equal lifespans and of equal size, the IRR and NPV calculations will produce similar ranking results as long as the projects under examination have "normal" cash flows. It is when the projects under examination have "non-normal" cash flows that IRR calculations can experience difficulty. Non-normal cash flows are defined as cash flows in which negative flows are juxtaposed within a series of positive cash inflows, creating a situation in which the sign will change more than once. When examining these "non-normal" projects, the Internal Rate of Return method will often produce multiple answers which leads to an incorrect accept/reject decision.

-----

Which of the following statements about the cost of capital is incorrect?

- \* The cost of retained earnings is equal to the return stockholders could earn on alternative investments of equal risk.
- \* WACC calculations should be based on after-tax costs of capital.
- \* Flotation costs can increase the WACC.
- \* If a company's tax rate increases, then, all else equal, its weighted average cost of capital will increase.
- \* A company's target capital structure affects its WACC (Weighted Average Cost of Capital).

That answer is incorrect.

Correct answer:

If a company's tax rate increases, then, all else equal, its weighted average cost of capital will increase.

A tax rate increase would lead to a decrease in the after-tax cost of debt and, consequently, the firm's WACC would decrease.

-----  
Which of the following statements best describes the theories of investors' preferences for dividends?

- \* The tax preference theory suggests that a company can increase its stock price by increasing its dividend payout ratio.
- \* One key advantage of a residual dividend policy is that it enables a company to follow a stable dividend policy.
- \* The clientele effect suggests that companies should follow a stable dividend policy.
- \* Modigliani and Miller argue that investors prefer dividends to capital gains.
- \* The bird-in-hand theory suggests that a company can reduce its cost of equity capital by reducing its dividend payout ratio.

That answer is incorrect.

Correct answer:

The clientele effect suggests that companies should follow a stable dividend policy.

Different groups, or clientele, of stockholders prefer different dividend payout policies. Stockholders in a low or tax-free tax bracket generally prefer cash income, so a payout would be their preference. On the other hand, stockholders in a high tax bracket might prefer reinvestment of earnings because they have little need for current investment income.

To the extent that stockholders can switch firms, a firm can change from one dividend payout policy to another to let stockholder who do not like the new policy sell to other investors who do. Yet this would be costly because of brokerage costs, the capital gains taxes that would have to be paid by the selling stockholders, and the chance that there will be a net loss of investors who like the firm's new dividend policy. Management should therefore, probably not change its policy.

Several studies show that there is a clientele effect, which is the tendency of a firm to attract a set of investors who like its dividend policy. The existence of the clientele effect does not necessarily imply that one dividend policy is better than another.

-----  
Two mutually exclusive projects each have a cost of \$10,000. The total, undiscounted cash flows from Project L are \$15,000, while the undiscounted cash flows from Project S total \$13,000. Their NPV profiles cross at a discount rate of 10 percent. Which of the following statements best describes this situation?

- \* To determine if a ranking conflict will occur between the two projects the cost of capital is needed as well as an additional piece of information.
- \* Project L should be selected at any cost of capital, because it has a higher IRR.
- \* The NPV and IRR methods will select the same project if the cost of capital is greater than 10 percent; for example, 18 percent.
- \* The NPV and IRR methods will select the same project if the cost of capital is less than 10 percent; for example, 8 percent.
- \* Project S should be selected at any cost of capital, because it has a higher IRR.

That answer is incorrect.

Correct answer:

The NPV and IRR methods will select the same project if the cost of capital is greater than 10 percent; for



example, 18 percent.

The crossover rate is the discount rate at which the NPV profiles of the two projects cross and, thus, at which the projects' NPVs are equal. As long as the discount rate is greater than the crossover rate, both the NPV and IRR methods will lead to the same conclusion.

-----

A company estimates that an average-risk project has a WACC = 10%, a below-average risk project has a WACC of 8 percent, and an above-average risk project has a WACC of 12 percent. Which of the following independent projects should the company accept?

- \* Project B has below-average risk and an IRR = 8.5 percent.
- \* Project A has average risk and an IRR = 9 percent.
- \* All of these projects should be accepted.
- \* Project C has above-average risk and an IRR = 11 percent.
- \* None of these projects should be accepted.

That answer is correct!

Since the projects are not mutually exclusive, and B's below average IRR is more than the below average WACC, this is the project that should be accepted. All the other projects' IRR is less than the appropriate WACC.

-----

Bricks, Inc. has just installed a factory for producing titanium-strengthened bricks. The fixed costs equal \$1.25 million. The bricks can be sold at \$2.25 per unit and cost \$1.9 per unit in variable expenses. How many bricks must be sold by Bricks, Inc. for it to break even?

- \* 1.34 million
- \* 3.57 million
- \* 4.19 million
- \* 2.19 million

That answer is incorrect.

Correct answer:  
3.57 million

The break-even quantity, Q, is given by  $Q = FC / (P - V)$ , where FC = total fixed costs, P = average sale price per unit and V = average variable cost per unit. In this case,  $Q = 1.25 / (2.25 - 1.9)$  million = 3.57 million bricks.

-----

The management of Clay Industries have adhered to the following capital structure: 40% debt, 45% common equity, and 15% perpetual preferred equity. The following information applies to the firm:

Yield to maturity of outstanding long-term debt = 9.5%

Expected return on the market = 14.5%  
Annual risk-free rate of return = 6.25%  
Historical Beta coefficient of Clay Industries Common Stock = 1.24  
Annual preferred dividend = \$1.75  
Preferred stock net offering price = \$28.50  
Combined state/federal corporate tax rate = 35%

Given this information, and using the Capital Asset Pricing Model to calculate the component cost of common equity, what is the Weighted Average Cost of Capital for Clay Industries?

- \* The WACC for Clay Industries cannot be determined from the information provided.
- \* 14.45%
- \* 10.00%
- \* 12.14%
- \* 8.54%
- \* 10.81%

That answer is incorrect.

Correct answer:

10.81%

The calculation of the Weighted Average Cost of Capital is as follows:  $\{\text{fraction of debt} * [\text{yield to maturity on outstanding long-term debt}][1 - \text{combined state/federal income tax rate}]\} + \{\text{fraction of preferred stock} * [\text{annual dividend}/\text{net offering price}]\} + \{\text{fraction of common stock} * \text{cost of equity}\}$ . The cost of common equity can be calculated using three methods, the Capital Asset Pricing Model (CAPM), the Dividend-Yield-plus-Growth-Rate (or Discounted Cash Flow) approach, and the Bond-Yield-plus-Risk-Premium approach. In this example, you are required to calculate the cost of equity using the Capital Asset Pricing Model (CAPM), which is illustrated as follows:  $\{\text{risk-free rate} + \text{beta}(\text{expected return on the market} - \text{risk-free rate})\}$ . Using this model, the cost of common equity can be found as 16.48%. The cost of perpetual preferred stock can be found by dividing the annual dividend by the net offering price, which is illustrated in this case as follows:  $\{\$1.75/28.50\} = 6.14\%$ . The after-tax cost of debt can be found by taking the yield to maturity on the firm's outstanding long-term debt (9.5%), and multiplying this figure by  $(1 - \text{annual tax rate } 35\%) = 6.175\%$ . Incorporating all of these figures into the WACC equation gives a Weighted Average Cost of Capital of 10.807%

-----  
Which of the following types of risk is commonly referred to as "diversifiable," or "unsystematic?" Choose the best answer.

- \* Stand-alone risk
- \* Market risk
- \* Beta risk
- \* Alpha risk
- \* Beta coefficient

That answer is correct!

Stand-alone risk is defined as the variability of an asset's expected returns if it were the only asset of a firm and the stock of that firm was the only security in an investor's portfolio. This type of risk is definitively reduced through diversification, and is commonly referred to as "unsystematic." Systematic risk, which is measured by the Beta Coefficient, cannot be eliminated through diversification and is therefore referred to as "non-diversifiable" or "market" risk.

-----  
Which of the following statements is correct?

- \* If you are choosing between two projects which have the same cost, and if their NPV profiles cross, then the project with the higher IRR probably has more of its cash flows coming in the later years.
- \* The NPV and IRR methods both assume that cash flows are reinvested at the cost of capital. However, the MIRR method assumes reinvestment at the MIRR itself.
- \* There can never be a conflict between NPV and IRR decisions if the decision is related to a normal, independent project, i.e., NPV will never indicate acceptance if IRR indicates rejection.
- \* A change in the cost of capital would normally change both a project's NPV and its IRR.
- \* To find the MIRR, we first compound CFs at the regular IRR to find the TV, and then we discount the TV at the cost of capital to find the PV.

That answer is incorrect.

Correct answer:

There can never be a conflict between NPV and IRR decisions if the decision is related to a normal, independent project, i.e., NPV will never indicate acceptance if IRR indicates rejection.

To see this, sketch out a NPV profile for a normal, independent project, which means that only one NPV profile will appear on the graph. If  $WACC < IRR$ , then IRR says accept. But in that case,  $NPV > 0$ , so NPV will also say accept.

-----  
Ace Consulting, a corporate finance consulting firm, is examining the operations of Intelligent Semiconductor and has determined the following information:

Sales \$1,000,000  
Total variable costs \$270,000  
Total fixed costs \$400,000  
Interest expense \$75,000  
EBIT \$325,000

Given this information, what is the degree of total leverage for Intelligent Semiconductor?

- \* 1.342
- \* 2.863
- \* 1.4925
- \* 3.077
- \* 2.292

That answer is incorrect.

Correct answer:

2.863

The Degree of Total Leverage (DTL) demonstrates how a given change in sales will impact a firm's EPS. The equation used for calculating the DTL is as follows:  $\frac{[Sales - variable costs]}{[sales - variable costs - fixed costs - interest expense]}$ . Incorporating the given values for these components into the DTL equation yields the following:  $\frac{[Sales \$1,000,000 - variable costs \$270,000]}{[sales \$1,000,000 - variable$

costs \$270,000 - fixed costs \$400,000 - interest expense \$75,000]}=2.863.

The EBIT figure is not explicitly incorporated into the DTL equation.

-----

Which of the following statements is most correct?

- \* Multiple rates of return are possible with the regular IRR method but not with the modified IRR method, and this fact is one reason given by the textbook for favoring MIRR (or modified IRR) over IRR.
- \* When dealing with mutually exclusive projects, the NPV and modified IRR methods always rank projects the same, but those rankings can conflict with rankings produced by the discounted payback and the regular IRR methods.
- \* All of these statements are true.
- \* When dealing with independent projects, discounted payback (using a payback requirement of 3 or less years), NPV, IRR, and modified IRR always lead to the same accept/reject decisions for a given project.
- \* All of these statements are false.

That answer is correct!

The MIRR is the discount rate at which the PV of a project's cost is equal to the PV of the sum of the future values of the cash inflows, compounded at the firm's cost of capital. The MIRR assumes that cash flows from all projects are reinvested at the cost of capital, while the IRR assumes that the cash flows from each project are reinvested at the project's own IRR.

-----

Which of the following are necessary conditions for the NPV and IRR methods to produce similar rankings? Choose the best possible answer.

- \* Projects must be mutually exclusive and of equal scale
- \* Projects must be independent and have normal cash flows
- \* Projects must be mutually exclusive and have normal cash flows
- \* Projects must have normal cash flows, and must be equal in scale and lifespan
- \* Projects must be of equal scale and have equal lifespans

That answer is incorrect.

Correct answer:

Projects must have normal cash flows, and must be equal in scale and lifespan

When examining mutually exclusive projects with equal lifespans and of equal size, the IRR and NPV calculations will produce similar ranking results as long as the projects under examination have "normal" cash flows. It is when the projects under examination have "non-normal" cash flows that the IRR method can experience some difficulty. Non-normal cash flows are defined as cash flows in which negative cash inflows are juxtaposed within a series of positive cash inflows, creating a situation in which the sign will change more than once. When examining these "non-normal" projects, the Internal Rate of Return calculation will often produce multiple answers which leads to an incorrect accept/reject decision. In any examination in which the IRR and NPV produce conflicting rankings, the NPV calculation should be used.

-----

Byron Corporation's present capital structure, which is also its target capital structure, is 40 percent debt and 60 percent common equity. Next year's net income is projected to be \$21,000, and Byron's payout ratio is 30 percent. The company's earnings and dividends are growing at a constant rate of 5 percent; the last dividend was \$2.00; and the current equilibrium stock price is \$21.88. Byron can raise all the debt financing it needs at 14 percent. If Byron issues new common stock, a 20 percent flotation cost will be incurred. The firm's marginal tax rate is 40 percent.

What is the maximum amount of new capital that can be raised at the lowest component cost of equity?

- \* \$14,700
- \* \$21,000
- \* \$17,400
- \* \$24,500
- \* \$12,600

That answer is incorrect.

Correct answer:

\$24,500

$$BP(RE) = \$21,000 \times .70 / .60 = \$24,500.$$

-----

Which of the following statements is most correct?

- \* If a firm repurchases its stock in the open market, the shareholders that tender are subject to capital gains taxes.
- \* All of the statements are correct.
- \* None of these statements are correct.
- \* If you own 100 shares in a company's stock, and the company does a 2 for 1 stock split, you will own 200 shares in the company following the split.
- \* Some dividend reinvestment plans increase the amount of equity capital available to the firm.

That answer is incorrect.

Correct answer:

All of the statements are correct.

Tendering (selling) shares in the open market is a taxable event. With the stock split, you will own twice the shares but the stock price will be halved. Dividend reinvestment plans permit stockholders to automatically reinvest their dividends in the stock of the paying firm. The new stock type of DRIPs invests the dividends in newly issued stock, hence these plans raise new capital for the firm.

-----

Intelligent Semiconductor is considering issuing additional common stock. The firm has an after-tax cost of debt of 8.55%, and the company's combined federal/state income tax is 35%. The risk-free rate of return is 5.6%, and the annual return on the broadest market index is expected to be 13.5%. Shares of Intelligent Semiconductor have a historical beta of 1.6. What is the cost of equity for this proposed common stock issue using the Capital Asset Pricing Model?

- \* 18.24%
- \* 4.09%
- \* 12.64%
- \* 7.04%
- \* 5.56%

That answer is correct!

The cost of issuing common stock can be calculated using several methods, including the Bond-Yield-Plus-Risk-Premium approach, Discounted Cash Flow method, or by using the Capital Asset Pricing Model. The latter is illustrated in this example. To calculate the cost of common equity using the CAPM, use the following formula: {cost of common equity = [risk free rate of return + beta(expected return on the market - risk free rate of return)]}. Incorporating the appropriate figures into this example will yield a cost of common equity at 18.24%.

-----

Given the following information, what is the required cash outflow associated with the acquisition of a new machine; that is, in a project analysis, what is the cash outflow at t = 0?

Purchase price of new machine	\$8,000	
Installation charge		2,000
Market value of old machine		2,000
Book value of old machine		1,000
Inventory decrease if new machine is installed	1,000	
Accounts payable increase if new machine is installed	500	
Tax rate		35%
Cost of capital	15%	

- \* -\$6,460
- \* -\$8,980
- \* -\$12,020
- \* -\$5,200
- \* -\$6,850

That answer is incorrect.

Correct answer:

-\$6,850

Cost plus installation	(\$10,000)
Sale of old machine	+2,000
Tax effect of sale (\$1,000 x 0.34)	(350)
Decrease in working capital	1,500
Total investment at t = 0	(\$6,850)

-----

Los Angeles Lumber Company (LALC) is considering a project with a cost of \$1,000 at time = 0 and

inflows of \$300 at the end of Years 1 - 5. LALC's cost of capital is 10 percent. What is the project's modified IRR (MIRR)?

- \* 15.2%
- \* 12.9%
- \* 20.7%
- \* 10.0%
- \* 18.3%

That answer is incorrect.

Correct answer:

12.9%

Tabular/Numerical solution:

$$TV = \$300(FVIFA(10\%,5)) = \$300(6.1051) = \$1,831.53.$$

$$\$1,000 = TV/(1 + MIRR)^5$$

$$\$1,000 = \$1,831.53/(1 + MIRR)^5$$

$$(1 + MIRR)^5 = 1.83153$$

$$MIRR = 12.866\%.$$

-----  
The degree of financial leverage is defined as:

- \* the change in EPS for a unit change in EBIT.
- \* the percentage change in EBIT for a 1% change in EPS.
- \* none of these answers.
- \* the percentage change in EBIT for a 1% change in the quantity sold.

That answer is incorrect.

Correct answer:

none of these answers.

The degree of financial leverage is defined as the percentage change in EPS for a 1% change in EBIT.

-----

Grant Grocers is considering the following investment projects:

Project	Size of Project	IRR of Project
V	1.0 million	12.0%
W	1.2 million	11.5%
X	1.2 million	11.0%
Y	1.2 million	10.5%
Z	1.0 million	10.0%

The company has a target capital structure, which is 50 percent debt and 50 percent equity. The after-tax cost of debt is 8 percent. The cost of retained earnings is estimated to be 13.5 percent. The cost of equity is estimated to be 14.5 percent if the company issues new common stock. The company's net income is \$2.5 million. If the company follows a residual dividend policy, what will be its payout ratio?

- \* 66%
- \* 12%
- \* 32%
- \* 54%
- \* 100%

That answer is incorrect.  
 Correct answer:  
 32%

The company's WACC (provided no new equity is issued) is  $8\%(0.5) + 13.5\%(0.5) = 10.75\%$ . Comparing the WACC with the project IRRs reveals that the company will undertake projects V, W, and X. Total financing costs for these projects is \$3,400,000. Of this amount,  $0.5(\$3,400,000) = \$1,700,000$  will be financed from retained earnings. Thus,  $\$2,500,000 - \$1,700,000 = \$800,000$  will be available for dividends. The payout ratio is then  $\$800,000/\$2,500,000 = 32\%$ .

-----

Rollins Corporation is constructing its MCC (Marginal Cost of Capital) schedule. Its target capital structure is 20 percent debt, 20 percent preferred stock, and 60 percent common equity. Its bonds have a 12 percent coupon, paid semiannually, a current maturity of 20 years, and sell for \$1,000. The firm could sell, at par, \$100 preferred stock, which pays a 12 percent annual dividend, but flotation costs of 5 percent would be incurred. Rollins' beta is 1.2, the risk-free rate is 10 percent, and the market risk premium is 5 percent. Rollins is a constant growth firm, which just paid a dividend of \$2.00, sells for \$27.00 per share, and has a growth rate of 8 percent.

The firm's policy is to use a risk premium of 4 percentage points when using the bond-yield-plus-risk-premium method to find  $k(s)$  (component cost of retained earnings). The firm's net income is expected to be \$1 million, and its dividend payout ratio is 40 percent. Flotation costs on new common stock total 10 percent, and the firm's marginal tax rate is 40 percent.

What is Rollins' component cost of debt?

- \* 8.6%
- \* 7.2%
- \* 10.0%
- \* 8.0%
- \* 9.1%

That answer is incorrect.  
 Correct answer:  
 7.2%

Since the bond sells at par of \$1,000, its YTM and coupon rate (12 percent) are equal. Thus, the before-tax cost of debt to Rollins is 12.0 percent. The after-tax cost of debt equals  $= 12.0\%(1 - 0.40) = 7.2\%$ .

-----

A firm needs to raise \$123 million for a proposed capital expansion project. Its earnings breakpoint is \$178 million and it is committed to maintaining a debt-to-equity ratio of 1.2. Its after-tax cost of debt is 6.2% and the required rate of return on its equity is 13.2%. The firm's marginal cost of capital for the



project equals \_\_\_\_\_.

- \* 7.12%
- \* 6.89%
- \* 9.38%
- \* 12.19%

That answer is incorrect.

Correct answer:

9.38%

Since the proposed capital requirement of \$123 million is less than the earnings breakpoint, the firm's marginal cost of capital for the project equals its WACC. With  $D/E = 1.2$ ,  $E/(D+E) = 1/(1+1.2) = 0.455$ . The WACC then equals  $0.455 \cdot 13.2\% + 0.545 \cdot 6.2\% = 9.38\%$ .

-----

Clay Industries, a diversified industrial firm, is considering investing into a new manufacturing facility which would allow the Company to expand its operations into a promising new market for industrial motors, specifically the High Temperature Superconducting, or HTS motors. This project is one of many currently under consideration for Clay Industries, and the amount of R&D expense allocated toward researching this new manufacturing facility is residual in nature. The following information applies to this new project.

R&D expense for the quarter \$15,000

Initial cash outlay \$45,000

- t1: (\$40,000)
- t2: (\$10,000)
- t3: \$40,000
- t4: \$40,000
- t5: \$16,000
- t6: \$25,000

Assuming no taxes and a \$0.00 salvage value at t6, what is the MIRR of this project?

- \* This project will have multiple MIRR at any discount rate
- \* 7.038%
- \* The MIRR cannot be calculated due to the fact that no discount rate has been provided
- \* The MIRR cannot be calculated due to the fact that the project has uneven cash flows
- \* 2.639%

That answer is incorrect.

Correct answer:

The MIRR cannot be calculated due to the fact that no discount rate has been provided

In order to calculate the Modified Internal Rate of Return, an explicit discount rate must be given. In this example, the MIRR cannot be calculated due to the fact that no discount rate has been provided. Remember that while the Internal Rate of Return is calculated without the use of an explicit discount rate, the Modified Internal Rate of Return requires some figure for the cost of capital.

-----

Which of the following methods involves calculating an average beta for firms in a similar business and then applying that beta to determine the beta of its own project?

- \* Risk premium method.
- \* CAPM method.
- \* Accounting beta method.
- \* Pure play method.
- \* All of these answers are correct.

That answer is incorrect.

Correct answer:

Pure play method.

The pure play method is used for estimating the beta of a project in which a firm identifies several companies whose only business is the product in question, then calculates the beta for each firm, and finally, averages the betas to find an approximation to its own project's beta.

-----

In his determination of a project's NPV and IRR, a financial analyst with Smith, Kleen, & Beetchnutty indexes the project's anticipated cash flows for the expected effects of inflation. However, the discount rate applied to these cash flows does not factor an adjustment for inflation. Assuming a positive inflation figure for the every period in the project's lifespan, which of the following correctly describes the effects of the omission on the NPV and IRR calculations?

- \* NPV and IRR will be biased upward
- \* NPV and IRR will be biased downward
- \* NPV will be biased downward, IRR will be biased upward
- \* NPV will be biased upward, IRR will be unaffected
- \* NPV will remain unaffected, IRR will be biased downward
- \* NPV will be biased downward, IRR will be unaffected

That answer is incorrect.

Correct answer:

NPV will be biased upward, IRR will be unaffected

By failing to include an the effects of anticipated inflation in the discount rate applied to the project's cash inflows, this analyst is creating a situation in which the NPV calculations will be biased upward. This is due to the fact that the project's inflows have been adjusted for the anticipated effects of POSITIVE inflation, i.e. these cash flows have been indexed upward, while at the same time the rate at which these cash flows are being discounted has not increased. In effect, the cash inflows of the project are being overstated, and this will lead to an upward bias in the NPV calculation.

Remember that the Internal Rate of Return calculation does not specify an explicit discount rate, rather calculates the discount rate that equates the cash inflows of a project with its cash outflows. The fact that this analyst has not incorporated the effects of inflation into the discount rate has no bearing on IRR, because the IRR equation does not call for a discount rate.

-----

Brock Brothers wants to maintain its capital structure, which is 30 percent debt, and 70 percent equity. The company forecasts that its net income this year will be \$1,000,000. The company follows a residual dividend policy, and anticipates a dividend payout ratio of 40 percent. What is the size of the company's capital budget?

- \* \$857,143
- \* \$1,428,571
- \* \$1,000,000
- \* \$600,000
- \* \$2,000,000

That answer is correct!

Since the company expects to pay out 40% of net income or \$400,000, it must expect to have \$600,000 of retained earnings available for capital investment. Given that the firm will finance new investment with 70% equity and 30% debt, \$600,000 must represent 70% of the firm's capital budget, that is,  $\$600,000 = (0.7)CB$  or  $CB = \$857,143$ .

-----

Which of the following statements is most correct?

- \* Investors can interpret a stock repurchase by a firm as a signal that the firm's managers believe the stock is underpriced.
- \* None of these statements are correct.
- \* After a 3-for-1 stock split, a company's price per share will fall and its number of shares outstanding will rise.
- \* Stock repurchases can be used by firms to defend against hostile takeovers since they increase the proportion of debt in a firm's capital structure.
- \* All of these statements are correct.

That answer is incorrect.

Correct answer:

All of these statements are correct.

These are all correct.

-----

Stargell Industries follows a strict residual dividend policy. The company has a capital budget of \$3,000,000. It has a target capital structure, which consists of 30 percent debt and 70 percent equity. The company forecasts that its net income will be \$3,500,000. What will be the company's expected dividend payout ratio this year?

- \* 40%
- \* 45%
- \* 30%
- \* 25%
- \* 35%

That answer is correct!

Step 1 Find equity required to maintain capital budget:

Capital budget	\$3,000,000
% of budget financed with equity	x 0.70
\$2,100,000	

Step 2 Calculate dividend:

Earnings	\$3,500,000
Less equity retained	(2,100,000)
Dividend	\$1,400,000

Step 3 Find payout ratio:

Dividend/Earnings =  $\$1,400,000/\$3,500,000 = 0.4000 = 40\%$ .

-----

Projects whose cash flows are not affected by the acceptance or rejection of other projects are known as \_\_\_\_\_.

- \* independent projects
- \* project net worth optimization
- \* optimal capital budgeting
- \* equity enhancement
- \* mutually exclusive projects

That answer is correct!

Independent Projects are defined as projects whose cash flows are not affected by the acceptance or rejection of other projects.

-----

Which of the following statements is correct?

- \* The rent referred to in the other statement is a sunk cost, and as such it should be ignored.
- \* The preceding statement would be true if "upward" were replaced with "downward."
- \* The existence of "externalities" reduces the NPV to a level below the value that would exist in the absence of externalities.
- \* If one of the assets that would be used by a potential project is already owned by the firm, and if that asset could be leased to another firm if the project is not undertaken, then the net rent that could be obtained should be charged as a cost to the project under consideration.
- \* In a capital budgeting analysis where part of the funds used to finance the project are raised as debt, failure to include interest expense as a cost in the cash flow statement when determining the project's cash flows will lead to an upward bias in the NPV.

That answer is incorrect.

Correct answer:

If one of the assets that would be used by a potential project is already owned by the firm, and if that asset could be leased to another firm if the project is not undertaken, then the net rent that could be obtained

should be charged as a cost to the project under consideration.

The foregone rent is an "opportunity cost" which should be charged to the project under consideration. The cash flows should not take account of interest, because financial costs are dealt with by discounting at the WACC. If interest were deducted to find cash flows, then this cost would be "double counted," and the NPV would be downward biased. Ignoring interest when determining cash flows produces no bias in the NPV whatever.

Note also that externalities can be either positive or negative--they tend to be negative if the new project is a substitute for existing products, but positive if the new project is complementary to the firm's other products.

-----

Which of the following equations correctly illustrates the calculation of the cost of equity using the Dividend-Yield-plus-Growth-Rate approach?

- \* Annual dividend/current stock price \* (1-tax rate)
- \* (Next annual dividend/current stock price) + expected growth rate
- \* (Retention rate)\*(ROE)
- \* Risk-free rate of return + beta(expected return on the market - risk-free rate of return)
- \* Payout ratio \* (ROE/[expected return-required rate of return])
- \* (Last annual dividend/[expected return - required return]) \* expected growth rate

That answer is incorrect.

Correct answer:

(Next annual dividend/current stock price) + expected growth rate

The Dividend-Yield-plus-Growth-Rate approach calls for the following components: next annual dividend, current stock price, and expected growth rate. This approach, also known as the Discounted Cash Flow (DCF) method, is a flexible and very adept tool in the hands of the financial analyst, and it is imperative that the CFA candidate fully understand both the applications and the methodology of this approach. The first choice illustrates the Capital Asset Pricing Model, while the second represents an approach for calculating sustainable growth rate. The remaining answers are somewhat fictitious.

-----

Which of the following statement completions is most correct? If investors prefer dividends to capital gains, then

- \* dividend policy as determined by the residual dividend policy is the only dividend policy which will maximize the price per share of common stock.
- \*  $k(s)$  will increase as dividends are reduced.
- \*  $k(s)$  will decrease as dividends are reduced.
- \* the equilibrium return,  $k(s)$ , will not be affected by a change in dividend policy because tax effects will offset these preferences.
- \*  $k(s)$  will decrease as the retention rate increases.

That answer is incorrect.

Correct answer:

$k(s)$  will increase as dividends are reduced.

The main conclusion of MM's irrelevance theory is that dividend policy does not affect the required rate of return on equity. Gordon-Lintner disagreed stating that  $k(s)$  decreases as the dividend payout is increased because investors are less certain of receiving the capital gains which should result from retaining earnings than they are of receiving dividends. They said that investors value expected dividends more highly than expected capital gains because the dividend yield is less risky than the growth component in the total expected return equation,  $k(s) = D1/P_0 + g$ .

MM disagreed and theorized that  $k(s)$  is independent of dividend policy, implying that investors are indifferent between dividends and capital gains.

-----

Gibson Inc. is considering the following five independent projects:

Project	Required Amount of Capital	IRR
A	\$200,000	20%
B	600,000	15
C	400,000	12
D	400,000	11
E	400,000	10

The company has a target capital structure, which is 40 percent debt and 60 percent equity. The company can issue bonds with a yield to maturity of 11 percent. The company has \$600,000 in retained earnings, and the current stock price is \$42 per share. The flotation costs associated with issuing new equity are \$2 per share. Gibson's earnings are expected to continue to grow at 6 percent per year. Next year's dividend is forecasted to be \$4.00. The firm faces a 40 percent tax rate. What is the size of Gibson's capital budget?

- \* \$200,000
- \* \$1,200,000
- \* \$800,000
- \* \$1,600,000
- \* \$2,000,000

That answer is incorrect.  
 Correct answer:  
 \$800,000

The size of Gibson's capital budget will be determined by the number of projects it can profitably undertake, i.e., those projects for which  $IRR > \text{applicable WACC}$ . First, find the costs of each type of financing: cost of retained earnings =  $k(s) = \$4/\$42 + 0.06 = 15.52\%$  and cost of debt =  $k(d) = 11\%$ . To calculate the cost of new equity, we solve for  $k(e) = \$4/(\$42 - \$2) + 0.06 = 0.16 = 16\%$ .

Given the firm's target capital structure and its retained earnings balance of \$600,000, the firm can raise \$1,000,000 with debt and retained earnings before it must use outside equity. Therefore, the WACC for 0 - \$1,000,000 of financing =  $0.4(0.11)(1 - 0.4) + 0.6(0.1552) = 11.95\%$ . Above \$1,000,000, the firm must issue some new equity, so the  $WACC = 0.4(0.11)(1 - 0.4) + 0.6(0.16) = 12.24\%$ .

Obviously, Projects A and B will be undertaken. You must then determine whether Project C will be profitable. Since in taking A and B we will need financing of \$800,000, the \$400,000 needed for Project C would involve financing \$200,000 with debt and retained earnings and \$200,000 with debt and new equity. Thus, the WACC for Project C is  $(\$200,000/\$400,000) \times 0.1195 + (\$200,000/\$400,000) \times 0.1224 = 12.095\%$  which is greater than Project C's IRR. Clearly, only Projects A and B should be accepted, and the firm's capital budget is \$800,000.

-----

Ace Consulting, a multinational corporate finance consulting firm, is examining the sales potential for a new line of industrial motors developed by Clay Industries, a large industrial firm. In their analysis, Ace Consulting meets with the management of Clay Industries, and asks these individuals to specify the worst "reasonable" set of circumstances, along with the best "reasonable set." These figures are measured against the predetermined "base case" situation. Which of the following choices best describes this technique for measuring stand-alone risk?

- \* Case study analysis
- \* Sensitivity analysis
- \* Monte Carlo simulation
- \* Relational analysis
- \* Scenario analysis
- \* Regression analysis

That answer is incorrect.

Correct answer:  
Scenario analysis

Scenario analysis is a risk analysis technique that considers both the sensitivity of NPV to changes in key variables and the likely range of key variable values. In a scenario analysis, a financial analyst asks operating or other managers to identify the best and worst "reasonable" situations, and these situations are examined against the predetermined "base case."

-----

Doering Computers is considering two mutually exclusive projects. Their cash flows are shown below:

t	Proj. A Cash Flows	Proj. B Cash Flows
0	-\$500	-\$700
1	200	250
2	400	475
3	100	125
4	----	225

The company's cost of capital (WACC) is 10 percent. Each of the projects can be repeated. What is the equivalent annual annuity (EAA) of the project, which adds the most to shareholder value?

- \* \$61.64
- \* \$52.82
- \* \$63.45
- \* \$35.20
- \* \$25.41

That answer is incorrect.

Correct answer:  
\$52.82

Find NPV of each project.

NPV(A) = \$87.5282.  
NPV(B) = \$167.4271.

Find EAA:

For Project A:  
N = 3; I = 10; PV = -87.5282; FV = 0; solve for PMT = EAA = \$35.1964.

For Project B:  
N = 4; I = 10; PV = -167.4271; FV = 0; solve for PMT = EAA = \$52.8184.

-----

TCH Corporation is considering two alternative capital structures with the following characteristics.

	A	B	
Debt/Assets ratio	0.3	0.7	
kd	10%	14%	

The firm will have total assets of \$500,000, a tax rate of 40 percent, and book value per share of \$10, regardless of capital structure. EBIT is expected to be \$200,000 for the coming year. What is the difference in earnings per share (EPS) between the two alternatives?

- \* \$4.78
- \* \$2.87
- \* \$7.62
- \* \$1.19
- \* \$3.03

That answer is incorrect.

Correct answer:  
\$2.87

Capital structure A: The firm will have debt of  $\$500,000(0.3) = \$150,000$  and equity of  $\$350,000$ . We're told the shares have a book value of \$10 so the number of shares outstanding is  $\$350,000/\$10 = 35,000$ . Interest expense will be  $\$150,000(10\%) = \$15,000$ . We can compute EBT as  $\text{EBIT} - I$  or  $\$200,000 - \$15,000 = \$185,000$ . Also, we can compute NI as  $\text{EBT}(1 - T)$  or  $\$185,000(1 - 0.4) = \$111,000$ . Finally,  $\text{EPS} = \$111,000/35,000 = \$3.17$ .

Capital structure B: The firm will have debt of  $\$500,000(0.7) = \$350,000$  and equity of  $\$150,000$ . The number of shares outstanding is  $\$150,000/\$10 = 15,000$ . Interest expense will be  $\$350,000(14\%) = \$49,000$ . We can compute EBT as  $\$200,000 - \$49,000 = \$151,000$ . Also, we can compute NI as  $\$151,000(1 - 0.4) = \$90,600$ . Finally,  $\text{EPS} = \$90,600/15,000 = \$6.04$ . The difference in EPS between capital structure A and capital structure B is  $\$6.04 - \$3.17 = \$2.87$ .

-----

Longstreet Corporation has a target capital structure of 30 percent debt, 50 percent common equity, and 20 percent preferred stock. The tax rate is 30 percent. The company has an optimal capital budget of \$1,500,000. Longstreet will retain \$500,000 of after-tax earnings this year. The last dividend was \$5, the current stock price is \$75, and the growth rate of the company is 10 percent. If the company raises capital



through a new equity issuance, then the flotation costs are 10 percent for the first \$500,000.

If the company issues more than \$500,000 in new equity the flotation cost increases to 15 percent. The cost of preferred stock is 9 percent and the cost of debt is 7 percent. (Assume debt and preferred stock have no flotation costs.) What is the weighted average cost of capital at the firm's optimal capital budget?

- \* 12.18%
- \* 18.15%
- \* 12.34%
- \* 11.94%
- \* 12.58%

That answer is incorrect.

Correct answer:

12.34%

First, calculate the after-tax component cost of debt as  $7\%(1 - 0.3) = 4.9\%$ . Next, calculate the retained earnings breakpoint as  $\$500,000/0.5 = \$1,000,000$ . Thus, to finance its optimal capital budget, Longstreet must issue some new equity. Note, Longstreet needs \$500,000 in financing beyond that which can be supported by retained earnings alone. However, of this additional \$500,000, 50% will be new equity and the remaining 50% will represent preferred stock and debt. Thus, Longstreet will issue \$250,000 in new equity and flotation costs of 10% will be incurred. The cost of new equity is then  $[\$5(1.10\%)/\$75(1 - 0.1)] + 10\% = 8.15\% + 10\% = 18.15\%$ . Finally, the WACC =  $4.9\%(0.3) + 9\%(0.2) + 18.15\%(0.5) = 12.34\%$ .

Seasons, Inc. has just decided to issue 1 million shares of new equity. The firm has had a steady dividend growth of 3% and is expected to continue along this path, having just paid a \$3.23 per share dividend. The flotation costs for the new equity amount to 2.2% of the total capital raised and the firm receives \$31.4 million before flotation costs, calculate the cost of external equity.

- \* 13.52%
- \* 14.19%
- \* 13.23%
- \* 13.83%

That answer is incorrect.

Correct answer:

13.83%

IF F is the percentage flotation cost and P is the amount of new equity raised per new share, then  $K_e = D_1/[P(1-F)] + g$ , where  $K_e$  is the cost of external equity. Here,  $g = 3\%$ ,  $D_1 = 3.23*(1+3\%) = \$3.32$ ,  $P = \$31.4$  and  $F = 2.2\%$ . Therefore,  $K_e = 3.32/(\$31.4*(1-0.022)) + 3\% = 13.83\%$ .

A 5-year project requires an initial outlay of 650. It also needs capital spending of 700 at the end of year 1 and 900 at the end of year 2. It has no revenues for the first 2 years but receives 1,200 in year 3, 1,600 in year 4 and 2,300 in year 5. If the project's cost of capital is 7.5%, the project's MIRR equals \_\_\_\_\_.

- \* 21%

- \* 17%
- \* 14%
- \* 7.5%

That answer is correct!

The MIRR is defined as that rate which discounts the terminal value of the cash inflows to equate to the present value of a project's costs (using the project's cost of capital).

This can be better understood using actual numbers.

The present value of the costs =  $650 + 700/1.075 + 900/1.075^2 = 2,080$ . The terminal value (future value at the end of year 5) of the project equals  $1,200 \cdot 1.075^5 + 1,600 \cdot 1.075 + 2,300 = 5406.75$ . Note that both these are calculated using the project's cost of capital. Then, MIRR satisfies  $2,080 = 5406.75/(1+MIRR)^5$ . Solving gives MIRR = 21%.

-----

Which of the following statements is most correct?

- \* When equipment is sold, companies receive a tax credit as long as the salvage value is less than the initial cost of the equipment.
- \* None of the answers are correct.
- \* In estimating net cash flows for the purpose of capital budgeting, interest and dividend payments should not be included since the effects of these items are already included in the weighted average cost of capital.
- \* Capital budgeting analysis for expansion and replacement projects is essentially the same because the types of cash flows involved are the same.
- \* All of the answers are correct.

That answer is incorrect.

Correct answer:

In estimating net cash flows for the purpose of capital budgeting, interest and dividend payments should not be included since the effects of these items are already included in the weighted average cost of capital.

Interest payments should not be included in the estimated cash flows because the effects of debt financing are reflected in the cost of capital used to discount the cash flows. If interest was subtracted from the cash flows, and then the remaining cash flows were discounted, the cost of debt would be double-counted.

-----

Which of the following affects a firm's business risk?

- \* The degree of operating leverage.
- \* The risk of adjusting sales prices.
- \* The level of uncertainty about future sales.
- \* All of these answers are correct.

That answer is incorrect.

Correct answer:

All of these answers are correct.

Business risk depends on: (1) unit sales variability, (2) sales price variability, (3) input price variability, (4) ability to adjust output prices for changes in input prices and, (5) the extent to which costs are fixed (operating leverage).

-----

Which of the following statements is correct?

\* "Business risk" is differentiated from "financial risk" by the fact that financial risk reflects only the use of debt, while business risk reflects both the use of debt and such factors as sales variability, cost variability, and operating leverage.

\* If corporate tax rates were decreased while other things were held constant, and if the Modigliani-Miller tax-adjusted tradeoff theory of capital structure were correct, this would tend to cause corporations to increase their use of debt.

\* The optimal capital structure is the one which simultaneously (1) maximizes the price of the firm's stock, (2) minimizes its WACC, and (3) maximizes its EPS.

\* None of these statements are true.

\* If corporate tax rates were decreased while other things were held constant, and if the Modigliani-Miller tax-adjusted tradeoff theory of capital structure were correct, this would tend to cause corporations to decrease their use of debt.

That answer is incorrect.

Correct answer:

If corporate tax rates were decreased while other things were held constant, and if the Modigliani-Miller tax-adjusted tradeoff theory of capital structure were correct, this would tend to cause corporations to decrease their use of debt.

If corporate tax rates were decreased while other things were held constant, and if the MM tax-adjusted tradeoff theory of capital structure were correct, corporations would decrease their use of debt because the tax shelter benefit would not be as great as when tax rates are high. Business risk is the riskiness of the firm's operations if it uses no debt. The optimal capital structure does not maximize EPS, and the degree of total leverage shows how a given change in sales will affect earnings per share.

-----

Which of the following are practical difficulties associated with capital structure and degree of leverage analyses?

\* All of these statements are correct.

\* None of the statements represent a serious impediment to the practical application of leverage analysis in capital structure determination.

\* Managers' attitudes toward risk differ and some managers may set a target capital structure other than the one that would maximize stock price.

\* Managers often have a responsibility to provide continuous service; they must preserve the long-run viability of the enterprise. Thus, the goal of employing leverage to maximize short-run stock price and minimize capital cost may conflict with long-run viability.

\* It is nearly impossible to determine exactly how P/E ratios or equity capitalization rates are affected by different degrees of financial leverage.

That answer is correct!

These are all practical difficulties.

-----  
Two projects being considered are mutually exclusive and have the following projected cash flows:

Year	Project A	Project B
0	-\$50,000	-\$50,000
1	15,625	0
2	15,625	0
3	15,625	0
4	15,625	0
5	15,625	99,500

If the required rate of return on these projects is 10 percent, which would be chosen and why?

- \* Project B because it has the higher IRR.
- \* Neither, because both have IRRs less than the cost of capital.
- \* Project B because it has the higher NPV.
- \* Project A because it has the higher IRR.
- \* Project A because it has the higher NPV.

That answer is incorrect.

Correct answer:

Project B because it has the higher NPV.

$NPV(A) = \$15,625(PVIFA(10\%,5)) - \$50,000 = \$15,625(3.7908) - \$50,000 = \$59,231.25 - \$50,000 = \$9,231.25.$

$NPVB = \$99,500(PVIF(10\%,5)) - \$50,000 = \$99,500(0.6209) - \$50,000 = \$61,779.55 - \$50,000 = \$11,779.55.$

$NPV(B) > NPV(A); \$11,779.55 > \$9,231.25; \text{Choose Project B.}$

-----  
A financial analyst with Smith, Kleen, and Beetchnutty is examining shares of Clever Industries, for possible investment. Clever Industries is involved in textile manufacturing, and the firm has been growing at a steady rate for much of the last nine decades. The analyst is trying to determine the appropriate current price range for Clever shares, and has ascertained the following information:

Expected annual dividend = \$0.35

Expected sustainable annual growth rate = 15%

Investors required rate of return = 18.6%

Given this information, what is the appropriate current price for Clever Industries common stock?

- \* \$10.28
- \* The current price of Clever Industries cannot be determined from the given information.
- \* \$1.88

- \* \$2.33
- \* \$9.72

That answer is incorrect.

Correct answer:

\$9.72

To calculate the appropriate stock price for Clever using the given information, the appropriate equation is as follows:  $\frac{\text{expected annual dividend}}{[\text{investor's required rate of return} - \text{expected growth rate}]}$ . Incorporating the given information into this equation yields a stock price of \$9.722. Remember that this model to stock valuations is most appropriate for firms who are in the constant growth stage. Another important note to remember is that this model will yield realistic results only in those instances in which the investor's required rate of return exceeds the expected growth rate.

-----

A set of projects where only one can be accepted is known as \_\_\_\_\_.

- \* Project Net Worth Optimization
- \* Equity Enhancement
- \* Independent Projects
- \* Optimal Capital Budgeting
- \* Mutually Exclusive Projects

That answer is incorrect.

Correct answer:

Mutually Exclusive Projects

Mutually Exclusive Projects are defined as a set of projects where only one can be accepted.

-----

Which of the following statements is most correct?

- \* None of these answers are correct.
- \* An increase in fixed costs, (holding sales and variable costs constant) will reduce the company's degree of operating leverage.
- \* If the company has no debt outstanding, then its degree of total leverage equals its degree of operating leverage.
- \* All of these answers are correct.
- \* An increase in interest expense will reduce the company's degree of financial leverage.

That answer is incorrect.

Correct answer:

If the company has no debt outstanding, then its degree of total leverage equals its degree of operating leverage.

The degree of financial leverage is the percentage change in EPS that results from a given percentage change in earnings before interest and taxes. If a firm has no debt outstanding the degree of financial leverage would be 1.0.

-----  
Which of the following firm's earnings per share (EPS) figure would be least sensitive to a percentage change in Earnings Before Interest and Taxes (EBIT)?

Firm A

EBIT: \$6,800,000

Interest Paid: \$505,000

Total Operating Expenses: \$80,000,000

Fixed Operating Expenses: \$50,250,000

Firm B

EBIT: \$20,000,000

Interest Paid: \$600,000

Total Operating Expenses: \$40,000,000

Fixed Operating Expenses: \$30,250,000

Firm C

EBIT: \$50,500,000

Interest Paid: \$3,500,000

Total Operating Expenses: \$66,000,000

Fixed Operating Expenses: \$30,750,000

Firm D

EBIT: \$49,700,000

Interest Paid: \$7,750,000

Total Operating Expenses: \$90,000,000

Fixed Operating Expenses: \$75,000,000

Firm E

EBIT: \$43,000,000

Interest Paid: \$7,000,000

Total Operating Expenses: \$85,000,000

Fixed Operating Expenses: \$60,500,000

\* The answer cannot be determined from the information provided.

\* Firm B

\* Firm A

\* Firm D

\* Firm C

\* Firm E

That answer is incorrect.

Correct answer:

Firm B

This question is asking you to calculate the Degree of Financial Leverage for each company. The Degree of Financial Leverage (DFL) measures the percentage change in EPS that results from a given percentage change in EBIT. Financial Leverage is the second component of total leverage, along with Operating Leverage. The equation used to calculate the Degree of Financial Leverage is as follows:  $\{DFL = [EBIT / (EBIT - Interest Paid)]\}$ . As companies incorporate more debt in their capital structure, their EPS figure will become more sensitive to fluctuations occurring from interest payments, and this is evidenced by an increase in the Degree of Financial Leverage.

In this example, Firm B has the lowest DFL with a figure of 1.031. In light of this information, it can be concluded that firm B has an EPS figure which is the least sensitive to a given change in EBIT.

When calculating the DFL figure, remember that the answer can never be less than one, and can never be negative. In a situation where the company under examination has zero debt, and no preferred stock dividends (and therefore no interest expense for purposes of the DFL equation), the DFL would be equal to one. It is important note to remember is that in calculating the Degree of Financial Leverage, dividend payments to preferred stockholders should be included in the interest expense figure.

Operating expenses are not factored into the DFL calculation, rather are used in the determination of Operating Leverage.

-----

The length of time required for an investment's net revenues to cover its cost is known as \_\_\_\_\_.

- \* Optimal Capital Structure
- \* Net Present Valuing
- \* Capital Budgeting
- \* Payback Period
- \* Weighted Average Cost of Capital (WACC)

That answer is incorrect.

Correct answer:  
Payback Period

Payback Period is defined as the length of time required for an investment's net revenues to cover its cost.

-----

Which of the following is/are true about project risk analysis?

- I. Stand-alone risk is measured by the variability of the projects expected returns.
- II. Corporate risk measures the impact of the project's risk on the company's stock price variability.
- III. Market risk measures the impact of the project on the stock's unsystematic risk.

- \* I & II
- \* II & III
- \* III only
- \* I, II & III
- \* II only
- \* I only

That answer is incorrect.

Correct answer:  
I only

Standalone risk evaluates the risk of a project ignoring all portfolio aspects by looking at the variability of

the project's projected returns. The corporate risk of a project is measured by the project's impact on the uncertainty about the firm's future earnings. The market risk of a project is measured by the project's impact on the systematic risk of the firm's stock.

-----

The depreciable basis of an asset under MACRS equals

- \* purchase price of the asset + shipping and installation costs.
- \* purchase price of the asset.
- \* purchase price of the asset + shipping and installation costs - salvage value.
- \* purchase price of the asset + shipping and installation costs - PV of salvage value.

That answer is correct!

The depreciable basis of an asset under MACRS equals the purchase price of the asset plus any shipping and installation costs. no adjustment for salvage value is made, regardless of which depreciation method is used.

-----

Scenario analysis ignores:

- \* the range of likely values that key variables can take.
- \* changes in some of the key variables.
- \* effect on the NPV of changes in project variables.
- \* none of these answers.

That answer is incorrect.

Correct answer:

none of these answers.

It is the Sensitivity Analysis that ignores the range of likely values that key variables can take. This is rectified using Scenario Analysis.

-----

All else equal, which of the following is/are true?

- I. Firms with higher business risk tend to have lower debt ratios.
- II. The higher the tax rate imposed on a firm, the lower its optimal debt ratio.
- III. The lower a firm's future capital requirements, the lower its current debt ratio.

- \* II & III
- \* III only
- \* I only
- \* II only
- \* I, II & III
- \* I & II



That answer is incorrect.

Correct answer:

I only

The higher the business risk and the future capital requirement, the stronger the balance sheet must be. This is accomplished through a lower reliance on debt. The higher the tax rate, the higher is the attractiveness of the tax-deductibility of the interest payments on debt. This lowers the after-tax cost of debt, raising the optimal debt ratio.

-----

A company is analyzing two mutually exclusive projects, S and L, whose cash flows are shown below:

Years	0	1	2	3
S	-1,100	1,000	350	50
L	-1,100	0	300	1,500

The company's cost of capital is 12 percent, and it can get an unlimited amount of capital at that cost. What is the regular IRR (not MIRR) of the better project, i.e., the project which the company should choose if it wants to maximize its stock price?

- \* 12.00%
- \* 18.62%
- \* 20.46%
- \* 19.08%
- \* 15.53%

That answer is incorrect.

Correct answer:

19.08%

Because the two projects are mutually exclusive, the project with the higher positive NPV is the "better" project.

	0	1	2	3
S	-1,100	1,000	350	50
NPV(S) = \$107.46				
IRR(S) = 20.46%				
	0	1	2	3
L	-1,100	0	300	1,500
NPV(L) = \$206.83				
IRR(L) = 19.08%				

Project L is the "better" project: its IRR = 19.08%.

-----

Incremental cash flows are

- \* cash flows that can be attributed to specific tax deductions like depreciation and interest expense.
- \* cash flows from a project that occur after the initial capital expense.
- \* cash flows that occur only if a project under consideration is accepted.
- \* the additional cash flows from a project for a given increase in capital invested.

That answer is incorrect.

Correct answer:

cash flows that occur only if a project under consideration is accepted.

Incremental cash flows of a project are the cash flows that occur if and only if the project is undertaken.

-----

Which of the following are components of the Degree of Financial Leverage? Choose the best answer.

- I. EBIT
- II. Total dollar sales
- III. Total variable costs
- IV. Total fixed costs
- V. Interest paid
- VI. Common shares outstanding
- VII. Sales in units
- VIII. Average sales price per unit
- XI. Average variable cost per unit

\* II, III, IV, VII

\* I, V, VI, VII, VIII

\* I, V, VI

\* None of these answers

\* II, III, IV, VI, VII

\* VII, VIII, XI

That answer is incorrect.

Correct answer:

None of these answers

The Degree of Financial Leverage (DFL) measures the percentage change in EPS that results from a given change in EBIT. The equation used to determine DFL is as follows:  
 $\{DFL = [EBIT / (EBIT - interest\ paid)]\}$ . Of the answers listed, only I and V are incorporated into the equation, which leaves none of the choices correct. The remaining figures are incorporated into the Degree of Operating Leverage calculation, which can be derived using several equations, including one based on unit sales and another based on total dollar sales.

-----

The management of Intelligent Semiconductor have adhered to the following capital structure: 40% debt, 45% common equity, and 15% perpetual preferred equity. The following information applies to the firm:

Before-tax cost of debt = 8.25%

Combined state/federal tax rate = 33%

Expected return on the market = 16.5%  
 Annual risk-free rate of return = 6.25%  
 Historical Beta coefficient of Intelligent Semiconductor's Common Stock = 1.34  
 Annual preferred dividend = \$1.05  
 Preferred stock net offering price = \$18.90  
 Expected annual common dividend = \$0.20  
 Common stock price = \$100.90  
 Expected growth rate = 9.75%  
 Subjective risk premium = 5.3%

Given this information, and using the Capital Asset Pricing Model (CAPM) to calculate the component cost of common equity, what is the Weighted Average Cost of Capital for Clay Industries?

- \* The WACC for Clay Industries cannot be calculated from the information.
- \* 12.94%
- \* 13.55%
- \* 12.03%
- \* 15.60%
- \* 11.92%

That answer is incorrect.  
 Correct answer:  
 12.03%

The calculation of the Weighted Average Cost of Capital is as follows:  $\{\text{fraction of debt} * [\text{yield to maturity on outstanding long-term debt}][1 - \text{combined state/federal income tax rate}]\} + \{\text{fraction of preferred stock} * [\text{annual dividend}/\text{net offering price}]\} + \{\text{fraction of common stock} * \text{cost of equity}\}$ . The cost of common equity can be calculated using three methods, the Capital Asset Pricing Model (CAPM), the Dividend-Yield-plus-Growth-Rate (or Discounted Cash Flow) approach, and the Bond-Yield-plus-Risk-Premium approach. In this example, you are asked to calculate the cost of common equity using the Capital Asset Pricing Model. To calculate the cost of equity using this approach, use the following equation:  $\{\text{risk-free rate} + \text{beta}(\text{expected return on the market} - \text{risk-free rate})\}$ . Incorporating the given information into this equation gives a cost of equity of 19.989%. The after-tax cost of debt can be found by multiplying the yield to maturity on the firm's outstanding long-term debt (8.25%) by (1-tax rate). Using this method, the after-tax cost of debt is found as 5.50%. The calculation of the cost of perpetual preferred stock is relatively straightforward, simply divide the annual preferred dividend (\$1.05) by the net offering price (\$18.90). Using this method, the cost of preferred stock is found as 5.556%. Incorporating these figures into the WACC equation gives the answer of 12.027%.

-----

Woodson Inc. has two possible projects, Project A and Project B with the following cash flows:

Year	Project A	Project B
0	-150,000	-100,000
1	100,000	45,000
2	105,000	65,000
3	40,000	80,000

At what cost of capital do the two projects have the same net present value (NPV)?

- \* 34.8%
- \* 10.3%
- \* 13.5%

- \* 15.8%
- \* 21.7%

That answer is incorrect.

Correct answer:

21.7%

To determine the crossover rate, find the differential cash flows between the 2 projects and then calculate the IRR of those differential cash flows.

t	Project change, A - B
0	-50,000
1	55,000
2	40,000
3	-40,000

IRR = 21.7%.

-----

A project requires an initial outlay of \$600. Over the next 5 years, it expects to have cash outflows of \$200, \$300, \$175, \$350 and \$150. The revenues over the same period equal \$100, \$400, \$700, \$550 and \$800. Assume that these cash flows occur at year-end. The project's payback period equals \_\_\_\_\_.

- \* 2.91 years
- \* 3.38 years
- \* 4.11 years
- \* 3.82 years

That answer is incorrect.

Correct answer:

3.38 years

The payback period is defined as the expected number of years that would be required to recover the original investment. In particular,

Payback period = Years before full recovery + (unrecovered cost at the start of payback year)/(net cash flow in the payback year)

To calculate the payback period, you must have the stream of net cash flows = Revenues - out flows. The net cash flows over the next 5 years are \$(100-200), \$(400-300), \$(700-175), \$(550-350) and \$(800-150) i.e. the net cash flows are: -\$100, \$100, \$525, \$200 and \$650.

The complete recovery of the total outlay of \$600 + \$100 (year 1 net outflow) occurs in the 4th year. At the beginning of the 4th year, the outstanding balance equals  $600 + 100 - 100 - 525 = 75$ . Therefore, payback period =  $3 + 75/200 = 3.375$  years.

-----

Intelligent Semiconductor, a diversified technology company, is considering two mutually-exclusive projects. Consider the following information:

Project A  
Initial cash outlay (\$530,000)  
t1: \$245,000  
t2: \$245,000  
t3: \$180,000  
Cost of capital 12.75%

Project B  
Initial cash outlay (\$645,000)  
t1: \$300,000  
t2: \$190,000  
t3: \$95,000  
t4: \$275,000  
Cost of capital 12.75%

Assuming no taxes, a \$0.00 salvage value at the end of each projects' life, and the ability for each project to be replicated identically, identify the superior project according to the Replacement Chain approach. Additionally, what are the NPV and IRR of the superior project over the common life? Choose the best answer.

- \* None of these answers is correct.
- \* Project A, NPV \$14, 651.21, IRR 13.40%
- \* Project A, NPV \$11,510.09, IRR 13.88%
- \* Project B, NPV \$11,441.18, IRR 12.27%
- \* Project A, NPV \$12,760.03, IRR 10.16%
- \* Project B, NPV \$13, 876.37, IRR 13.30%

That answer is correct!

The Replacement Chain, or "Common Life" approach, is a useful method which allows two or more projects with unequal lives to be examined. In the Replacement Chain approach, the lifespans of each project being examined are multiplied in such a way that the resulting projects share a "common life."

In this example, Project A has a lifespan of three periods, whereas Project B has a lifespan of four. The common multiple of both is twelve, and to transform each project into one which has a 12 period lifespan, multiply project A by three and Project B by four. Doing so will result in the following series of cash flows for Project A:

Project A  
t0: (\$530,000)  
t1: \$245,000  
t2: \$245,000  
t3: [ \$180,000 + (\$530,000)]=(\$350,000)  
t4: \$245,000  
t5: \$245,000  
t6: [ \$180,000 + (\$530,000)]=(\$350,000)  
t7: \$245,000  
t8: \$245,000  
t9: [ \$180,000 + (\$530,000)]=(\$350,000)  
t10: \$245,000  
t11: \$245,000  
t12: \$180,000

Carrying Project B through twelve periods will result in the following cash flows:

Project B  
t0: (\$645,000)

t1: \$300,000  
t2: \$190,000  
t3: \$95,000  
t4: [\$275,000 + (\$645,000)] = (\$370,000)  
t5: \$300,000  
t6: \$190,000  
t7: \$95,000  
t8: [\$275,000 + (\$645,000)] = (\$370,000)  
t9: \$300,000  
t10: \$190,000  
t11: \$95,000  
t12: \$275,000

Incorporating these values into the NPV and IRR equations will determine that project A is superior on both figures, having a NPV of \$14,130, and an IRR of 13.40%. Project B has a NPV of \$13,963.37 and an IRR of 13.30%. None of the answers correctly illustrates these findings.

-----

Hensley Corporation uses breakeven analysis to study the effects of expansion projects it considers. Currently, the firm's plastic bag business segment has fixed costs of \$120,000, while its unit price per carton is \$1.20 and its variable unit cost is \$0.60. The firm is considering a new bag machine and an automatic carton folder as modifications to its existing production lines.

With the expansion, fixed costs would rise to \$240,000, but variable cost would drop to \$0.41 per unit. One key benefit is that Hensley can lower its wholesale price to its distributors to \$1.05 per carton (i.e., its selling price), and this would likely more than double its market share, as it will become the lowest cost producer. What is the change in the breakeven volume with the proposed project?

- \* 100,000 units
- \* 75,000 units
- \* 0 units
- \* 175,000 units
- \* 200,000 units

That answer is incorrect.  
Correct answer:  
175,000 units

Calculate the old and new breakeven volumes using the old data and new projections:  
Old  $Q(\text{BE}) = \$120,000 / (\$1.20 - \$0.60) = \$120,000 / \$0.60 = 200,000$  units.  
New  $Q(\text{BE}) = \$240,000 / (\$1.05 - \$0.41) = \$240,000 / \$0.64 = 375,000$  units.  
Change in breakeven volume =  $375,000 - 200,000 = 175,000$  units.

-----

If a firm uses debt financing (Debt ratio = 0.40) and sales change from the current level, which of the following statements is most correct?

- \* The percentage change in net income relative to the percentage change in sales (and in EBIT) will not depend on the interest rate paid on the debt.
- \* The percentage change in EBIT will equal the percentage change in net income.
- \* The percentage change in net operating income (EBIT) resulting from the change in sales will exceed

the percentage change in net income (NI).

\* Since debt is used, the degree of operating leverage must be greater than 1.

\* The percentage change in net operating income will be less than the percentage change in net income.

That answer is incorrect.

Correct answer:

The percentage change in net operating income will be less than the percentage change in net income.

The greater the use of fixed assets, the more sensitive EBIT will be to changes in sales. Interest charges on debt are included in net income and not operating income, as the use of debt financing will have an impact on net income when sales change.

-----

Intelligent Semiconductor is considering issuing additional common stock. The firm has an after-tax cost of debt of 8.55%, with the yield to maturity on the firm's outstanding senior long-term debt at 13%. The company's combined federal/state income tax is 35%. The risk-free rate of return is 5.6%, and the annual return on the broadest market index is expected to be 13.5%. Shares of Intelligent Semiconductor have a historical beta of 1.6, and in the past, the firm has assumed a 265 basis point risk premium when calculating the cost of equity. The firm's next dividend is expected to be \$0.50 per share, and the dividend has been growing at a 12% annual rate. Finally, the firm's common stock is priced at \$24.78. What is the cost of equity for this firm using the Dividend-Yield-plus-Growth-Rate, or Discounted Cash Flow (DCF) approach?

\* 18.24%

\* The cost of equity using the DCF approach cannot be calculated from the information provided.

\* 16.15%

\* 14.02%

\* 15.65%

\* 11.20%

That answer is incorrect.

Correct answer:

14.02%

The cost of issuing common stock can be calculated using several methods, including the Bond-Yield-Plus-Risk-Premium approach, Discounted Cash Flow method, or by using the Capital Asset Pricing Model. In this example, you have been asked to calculate the cost of equity using the Discounted Cash Flow method, which is commonly referred to as the Dividend-Yield-plus-Growth-Rate approach. In calculating the cost of equity using this approach, the following components are necessary: next expected annual dividend, growth rate of dividends, and the current stock price. Everything else provided in this example is largely irrelevant. The calculation of the cost of equity using the DCF approach is as follows:  $\{[\text{next annual dividend } \$0.50 / \text{common stock } \$24.78] + \text{expected dividend growth rate } 12\% \} = 14.018\%$ .

-----

Clay Industries, a diversified industrial firm, is considering investing into a new manufacturing facility which would allow the Company to expand its operations into a promising new market for industrial motors, specifically the High Temperature Superconducting, or HTS motors. This project is one of many currently under consideration for Clay Industries, and the amount of R&D expense allocated toward researching this new manufacturing facility is residual in nature. The following information applies to this new project.

R&D expense for the quarter \$15,000

Initial cash outlay (\$45,000)

t1: (\$40,000)

t2: (\$10,000)

t3: \$40,000

t4: \$40,000

t5: \$16,000

t6: \$25,000

Assuming no taxes and a \$0.00 salvage value at t6, which of the following best represent the IRR for his project?

- \* 7.039%
- \* This project will have multiple IRR at any discount rate
- \* The IRR cannot be calculated due to the fact that no discount rate has been provided
- \* The IRR cannot be calculated due to the fact that the project has uneven cash flows
- \* 2.639%

That answer is correct!

Remember that the quarterly R&D expense is a sunk cost, and one which cannot be directly attributable to this project. Because this quarterly R&D expense is not incremental in nature, it should be omitted from the IRR calculation. Additionally, the fact that this project has uneven cash flows is irrelevant for our calculation of IRR.

To determine the IRR for this project, the following information is necessary: the initial investment outlay, the amount of each period's cash inflow, and the number of periods. In calculating IRR, no discount rate is necessary, so the last answer is incorrect. The calculation of the IRR is found as follows: incorporate the initial investment outlay of (\$45,000) as C<sub>0</sub>, for C<sub>1</sub>=\$40,000, C<sub>2</sub>=\$10,000, C<sub>3</sub>=\$40,000, C<sub>4</sub>=\$40,000, C<sub>5</sub>=\$16,000, C<sub>6</sub>=\$25,000, CPT IRR. This yields an IRR of 7.039%.

-----

Allison Engines Corporation has established a target capital structure of 40 percent debt and 60 percent common equity. The firm expects to earn \$600 in after-tax income during the coming year, and it will retain 40 percent of those earnings. The current market price of the firm's stock is \$28; its last dividend was \$2.20, and its expected dividend growth rate is 6 percent. Allison can issue new common stock at a 15 percent flotation cost. What will Allison's marginal cost of equity capital (not the WACC) be if it must fund a capital budget requiring \$600 in total new capital?

- \* 13.9%
- \* 14.3%
- \* 9.7%
- \* 15.8%
- \* 7.9%

That answer is incorrect.

Correct answer:

15.8%



Calculate the retained earnings break point:

Given:

Net income = \$600; Debt = 0.4; Equity = 0.6; Dividend payout = 0.6.

Break point(RE) =  $\$600(1 - 0.6)/0.6 = \$400$ .

Allison will need new equity capital; capital budget exceeds Break point(RE).

Use the dividend growth model to calculate k(s):

$k(s) = D1/P_0 + g = 2.2(1.06)/28(1-.15) + .06 = 0.0979 + 0.06 = 0.1579 = 15.8\%$ .

k(s) = component cost of retained earnings or internal equity.

-----

As the director of capital budgeting for Raleigh/Durham Company, you are evaluating two mutually exclusive projects with the following net cash flows:

Year	Project X	Project Z
0	-\$100	-\$100
1	50	10
2	40	30
3	30	40
4	10	60

Is there a crossover point in the relevant part of the NPV profile graph (the northeast, or upper right, quadrant)?

- \* Yes, at k = 13%
- \* Yes, at k = 9%
- \* No
- \* Yes, at k = 7%
- \* Yes, at k = 11%

That answer is incorrect.

Correct answer:

Yes, at k = 7%

Financial calculator solution:

Project X

Inputs: CF(0) = -100; CF(1) = 50; CF(2) = 40; CF(3) = 30; CF(4) = 10.

Output: IRR = 14.489%.

Project Y

Inputs: CF(0) = -100; CF(1) = 10; CF(2) = 30; CF(3) = 40; CF(4) = 60.

Output: IRR = 11.79%.

Calculate the NPVs of the projects at k = 0 discount rate.

$NPV(X, k = 0\%) = -100 + 50 + 40 + 30 + 10 = 30$ .

$NPV(Y, k = 0\%) = -100 + 10 + 30 + 40 + 60 = 40$ .

Calculate the IRR of the differential project, i.e., Project(X - Y)

IRR(X - Y) Inputs: CF(0) = 0; CF(1) = 40; CF(2) = 10; CF(3) = -10; CF(4) = -50.

Output: IRR = 7.167%.

Solely using the calculator we can determine that there is a crossover point in the relevant part of an NPV profile graph. Project X has the higher IRR. Project Y has the higher NPV at  $k = 0$ . The crossover rate is 7.17% and occurs in the upper right quadrant.

-----

The capital budgeting director of Sparrow Corporation is evaluating a project, which costs \$200,000, is expected to last for 10 years and produce after-tax cash flows, including depreciation, of \$44,503 per year. If the firm's cost of capital is 14 percent and its tax rate is 40 percent, what is the project's IRR?

- \* 18%
- \* 8%
- \* 12%
- \* -5%
- \* 14%

That answer is correct!

$\$200,000 = \$44,503(PVIFA(Irr,10))$   
 $PVIFA(Irr,10) = 4.49408 ; IRR = 18\%$ .

-----

The management of Clay Industries have adhered to the following capital structure: 50% debt, 35% common equity, and 15% perpetual preferred equity. The following information applies to the firm:

Before-tax cost of debt = 9.5%  
Combined state/federal tax rate = 35%  
Expected return on the market = 14.5%  
Annual risk-free rate of return = 6.25%  
Historical Beta coefficient of Clay Industries Common Stock = 1.24  
Annual preferred dividend = \$1.55  
Preferred stock net offering price = \$24.50  
Expected annual common dividend = \$0.80  
Common stock price = \$30.90  
Expected growth rate = 9.75%

Given this information, and using the Dividend-Yield-plus-Growth-Rate approach to calculate the component cost of common equity, what is the Weighted Average Cost of Capital for Clay Industries?

- \* 9.82%
- \* 6.93%
- \* 8.36%
- \* 10.02%
- \* The WACC for Clay Industries cannot be calculated from the information provided.
- \* 9.79%

That answer is incorrect.

Correct answer:

8.36%

The calculation of the Weighted Average Cost of Capital is as follows: {fraction of debt \* [yield to maturity on outstanding long-term debt][1-combined state/federal income tax rate]} + {fraction of preferred stock \* [annual dividend/net offering price]} + {fraction of common stock \* cost of equity}. The cost of common equity can be calculated using three methods, the Capital Asset Pricing Model (CAPM), the Dividend-Yield-plus-Growth-Rate (or Discounted Cash Flow) approach, and the Bond-Yield-plus-Risk-Premium approach. In this example, you are asked to calculate the cost of common equity using the Dividend-Yield-plus-Growth-Rate, or Discounted Cash Flow, approach. To calculate the cost of common equity using this approach, divide the expected annual dividend by the selling price of the outstanding common stock, and add the expected growth rate. Using the DCF method, the cost of common equity can be found as follows:  $\{[\$0.80/\$30.90] + 9.75\% \} = 12.34\%$ . The after-tax cost of debt can be found by multiplying the yield to maturity of the firm's outstanding long-term debt (9.5%) by (1-tax rate). Using this method, the after-tax cost of debt is found as 6.175%. The calculation of the cost of perpetual preferred stock is relatively straightforward, simply divide the annual preferred dividend by the net offering price. Using this method, the cost of preferred stock is found as 6.327%. Incorporating these figures into the WACC equation gives the answer of 8.355%.

-----

Assume that all the assumptions of Modigliani and Miller hold. In particular, there are no taxes, transaction costs and signaling effects. Then, if a firm raises its dividend pay-out ratio, the stock price will:

- \* not be affected.
- \* decrease
- \* increase
- \* the effect is uncertain.

That answer is correct!

Under the M&M assumptions, dividend policy is irrelevant to the pricing of stocks. What determines prices is the underlying profitability of the firms.

-----

The terminal year cash flows of a project consist of which of the following?

- I. After-tax salvage value of project assets.
- II. Tax adjustments between book and market salvage value.
- III. Operating cash flow in the final year.
- IV. Return of net working capital.

- \* I, II & IV
- \* IV only
- \* II & IV
- \* I, II, III & IV
- \* I, II & III
- \* II only
- \* III only

\* I only

That answer is correct!

Terminal cash flows are cash flows that are received at or after the end of a project. These include items like salvage value, tax refunds, etc. Operating cash flows in the final year of a project are still part of a project's operating revenue and not the terminal cash flows.

-----

Carolina Insurance Company, an all-equity life insurance firm, is considering the purchase of a fire insurance company. If the purchase is made, Carolina will be 50 percent larger than before. Currently, Carolina's stock has a beta of 1.2 and the return required is 15.2 percent. The fire insurance company is expected to generate a return of 20 percent with a beta of 2.5. If the risk-free rate is 8 percent and the market risk premium is 6 percent, should Carolina make the investment?

- \* No; the expected return is less than the required return.
- \* Yes; the project's risk/return combination lies above the SML.
- \* No; the IRR is less than the cost of capital.
- \* Yes; the IRR is greater than the cost of capital.
- \* Yes; the expected return is greater than the required return.

That answer is correct!

Calculate the required return,  $k(s)$ , and compare to the expected return.

$$k(s) = 0.08 + (0.06)2.5 = 0.23 = 23\%.$$

The required return (23%) is more than the expected return (20%) so the investment should not be made.

-----

Under the Residual Dividend Policy, a firm pays out:

- \* none of these answers.
- \* only net earnings left over after financing the current optimal capital budget requirements, consistent with the target capital structure.
- \* all of its earnings left over after taxes and expenses as dividends.
- \* only net earnings from new projects as dividends, using the rest to finance current capital requirements.

That answer is incorrect.

Correct answer:

only net earnings left over after financing the current optimal capital budget requirements, consistent with the target capital structure.

Under the Residual Dividend Policy, a firm first determines the amount of capital it requires for sufficiently profitable projects. It then uses retained earnings to supply equity capital and raises debt in the proper amount to maintain the target capital structure. If any earnings are left over after this, they are paid out as dividends. If not, the firm will not only not pay any dividends but also issues new equity for financing.

-----  
In the calculation of WACC, which of the following should be ignored?

- \* none of these answers.
- \* long-term debt.
- \* current liabilities.
- \* preferred equity.

That answer is incorrect.  
Correct answer:  
current liabilities.

Short-term debt is not a part of the capital structure. The capital budgeting process allocates resources to long-term asset investments and as such is financed by liabilities/capital of similar maturity. Hence, short-term/current liabilities do not enter into WACC calculations.

-----  
Which of the following is/are true about the MACRS?

- I. MACRS does not use economic life of an asset while calculating depreciation.
- II. Under the MACRS system, the depreciation expense is larger in the early years, leading to lower taxes.
- III. Depreciation under MACRS must be calculated using the accelerated depreciation method.

- \* III only
- \* II only
- \* I, II & III
- \* II & III
- \* I only
- \* I & II

That answer is incorrect.  
Correct answer:  
I & II

MACRS classifies assets into several classes based on a pre-determined length of time called the "recovery period." The recovery period, while positively correlated with actual economic life, does not track the economic lives of individual assets precisely. In particular, recovery periods are shorter than actual economic lives, leading to higher depreciation expenses and lower taxes. For long-recovery period classes (>27 years), straight-line depreciation must be used while accelerated methods may be used for shorter life assets.

-----  
Relative to projects whose cash inflows occur during earlier periods, projects whose cash inflows occur primarily during later periods have NPV profiles which are best characterized as which of the following?

- \* Steeper
- \* Symmetrical about 0
- \* Less steep
- \* Convex
- \* Concave

That answer is correct!

Projects whose cash inflows occur primarily during later periods are characterized by having steeper NPV profiles versus projects whose cash inflows occur primarily during earlier periods. This is indicative of an increased sensitivity to changes in the cost of capital for projects whose cash inflows occur primarily during later periods.

-----

Which of the following statements is false?

- \* When  $IRR = k$  (the cost of capital),  $NPV = 0$ .
- \* If the multiple IRR problem does not exist, any independent project acceptable by the NPV method will also be acceptable by the IRR method.
- \* The IRR can be positive even if the NPV is negative.
- \* The NPV will be positive if the IRR is less than the cost of capital.
- \* The NPV method is not affected by the multiple IRR problem.

That answer is incorrect.

Correct answer:

The NPV will be positive if the IRR is less than the cost of capital.

If the IRR is less than the cost of capital, then taking on the project imposes a cost on current stockholders. If the cost of capital is greater than the IRR, the NPV will be negative.

-----

A firm's capital structure has a debt-to-equity ratio of 0.8. The pretax cost of debt is 7%. The beta of the stock is 1.3 in an environment with risk-free rate of 5.5% and an expected market return of 16%. The firm is in the 45% tax bracket. The weighted average cost of capital of the firm equals \_\_\_\_\_.

- \* 12.35%
- \* 9.43%
- \* 6.91%
- \* 13.81%

That answer is correct!

Using CAPM, the cost of equity equals  $5.5\% + 1.3 \times (16\% - 5.5\%) = 19.15\%$ . Since the debt interest is tax deductible, the after-tax cost of debt equals  $7\% \times (1 - 0.45) = 3.85\%$ . Now, the D/E ratio = 0.8. Hence,  $(D+E)/E = 1.8$ , giving  $E/(D+E) = 0.556$ . Thus, equity forms 55.6% of the capital while debt forms 44.4%. The WACC is then equal to  $0.556 \times 19.15\% + 0.444 \times 3.85\% = 12.35\%$ .

-----  
A project has the following cash flows over the next 5 years: \$800, \$300, \$400, \$900 and \$1,200. Assume all cash flows occur at the end of a year. The project requires an initial cash outlay of \$1,750. The firm faces a marginal borrowing rate of 8%. The payback period for the project equals \_\_\_\_\_.

- \* 3.86 year
- \* 4.19 years
- \* 4 years
- \* 3.28 years

That answer is incorrect.

Correct answer:

3.28 years

The payback period is defined as the expected number of years that would be required to recover the original investment. In particular,

Payback period = Years before full recovery +  
(unrecovered cost at the start of payback year)/(net cash flow in the payback year)

In this case, the recovery occurs in the 4th year. At the beginning of the 4th year, the unrecovered cost equals  $1,750 - 800 - 300 - 400 = 250$ . Total cash flow in the 4th year equals 900. Therefore, payback period =  $3 + 250/900 = 3.28$  years. Note that the discount rate does not figure in the calculation of payback period.

-----  
While calculating the weights of various components of the capital structure, one must use:

- \* minimum of book or market values.
- \* book values.
- \* liquidation values.
- \* market values.

That answer is incorrect.

Correct answer:

market values.

WACC calculations are based on current market values, not historical cost.

-----  
Assume the following information about two individual projects.

Project A

Initial cash outflow: \$175,000

Expected cash inflows

t1: \$75,000

t2: \$65,000  
t3: \$35,000  
t4: \$35,000  
t5: \$15,000

Project B

Initial cash outflow: \$100,000

Expected cash inflows

t1: \$15,000  
t2: \$15,000  
t3: \$18,000  
t4: \$45,000  
t5: \$45,000

Assuming these projects are not mutually exclusive, and the cost of capital is 10%, which of the two should be undertaken according to NPV? Additionally, which of the two projects has the steeper NPV profile?

- \* Project B should be accepted, project A has a steeper NPV profile
- \* Project A should be accepted, project A has a steeper NPV profile
- \* Project B should be accepted, project B has a steeper NPV profile
- \* Both projects should be accepted, project A has a steeper NPV profile
- \* Project A should be accepted, project B has a steeper NPV profile
- \* Neither project should be accepted, project B has a steeper NPV profile

That answer is incorrect.

Correct answer:

Project A should be accepted, project B has a steeper NPV profile

The NPV of project B is found to be (\$1,766.21), and thus should not be accepted. However, project A has a positive NPV of \$6,416.14, and should be accepted. Project B is characterized as having the majority of its cash inflows occurring in later time periods, and thus is more sensitive to changes in the cost of capital. This is exemplified by a steeper NPV profile for project B.

-----  
Which of the following equations correctly illustrates the calculation of the cost of equity using the Discounted Cash Flow approach?

- \* (Retention rate)\*(ROE)
- \* Last annual dividend/(1 + required rate of return)
- \* Next annual dividend/current stock price \* (1-tax rate)
- \* (Next annual dividend/current stock price) + expected growth rate
- \* (Last annual dividend/[expected return - required return]) \* expected growth rate
- \* Risk-free rate of return + beta(expected return on the market - risk-free rate of return)

That answer is incorrect.

Correct answer:

(Next annual dividend/current stock price) + expected growth rate

The Dividend-Yield-plus-Growth-Rate approach calls for the following components: next annual dividend,



current stock price, and expected growth rate. This approach, also known as the Discounted Cash Flow (DCF) method, is a flexible and very adept tool in the hands of the financial analyst, and it is imperative that the CFA candidate fully understand both the applications and the methodology of this approach. The fourth choice illustrates the Capital Asset Pricing Model, while the fifth represents an approach for calculating sustainable growth rate. The remaining answers are somewhat fictitious.

-----

Rollins Corporation is constructing its MCC schedule. Its target capital structure is 20 percent debt, 20 percent preferred stock, and 60 percent common equity. Its bonds have a 12 percent coupon, paid semiannually, a current maturity of 20 years, and sell for \$1,000. The firm could sell, at par, \$100 preferred stock, which pays a 12 percent annual dividend, but flotation costs of 5 percent would be incurred. Rollins' beta is 1.2, the risk-free rate is 10 percent, and the market risk premium is 5 percent. Rollins is a constant growth firm, which just paid a dividend of \$2.00, sells for \$27.00 per share, and has a growth rate of 8 percent.

The firm's policy is to use a risk premium of 4 percentage points when using the bond-yield-plus-risk-premium method to find  $k(s)$ . The firm's net income is expected to be \$1 million, and its dividend payout ratio is 40 percent. Flotation costs on new common stock total 10 percent, and the firm's marginal tax rate is 40 percent.

What is Rollins' WACC once it starts using new common stock financing?

- \* 16.6%
- \* 13.6%
- \* 14.1%
- \* 16.9%
- \* 16.0%

That answer is incorrect.

Correct answer:

14.1%

$k(e) = \$2.16 / \$27.00(1 - .10) + 0.08 = 0.08889 + 0.08 = 0.169 = 16.9\%$ .

$WACC = 0.2(12.0\%)(0.6) + 0.2(12.6\%) + 0.6(16.9\%) = 14.1\%$ .

-----

Intelligent Semiconductor, a diversified technology company, is evaluating the sales of its cadmium silicon transistor coils, and has identified the following information:

Fixed production costs for these transistors: \$750,000

Average sales price per unit: \$405.00

Variable cost per unit: \$313.60

Which of the following best describes the breakeven quantity for this product?

- \* The breakeven quantity for this product cannot be determined from the information provided.
- \* 8,206 units
- \* 1,044 units
- \* 5,397 units
- \* 7,397 units

That answer is incorrect.

Correct answer:

8,206 units

To calculate the breakeven quantity for a product, use the following equation:  $\{\text{Fixed operating costs}/[\text{avg. sales price per unit} - \text{variable cost per unit}]\}$ . Incorporating the given information into this equation yields the following:  $\{\$750,000/[\$405 - \$313.60]\}=8,206$  units.

-----

The optimal debt ratio is the debt ratio that:

- \* minimizes the firm's bankruptcy costs.
- \* maximizes the firm's earnings per share and maximizes the firm's stock price.
- \* maximizes the firm's stock price.
- \* maximizes the firm's earnings per share.

That answer is incorrect.

Correct answer:

maximizes the firm's stock price.

The optimal debt ratio is defined as the debt level that maximizes the firm's stock price.

-----

If a firm adheres strictly to the residual dividend policy, then if its optimal capital budget requires the use of all earnings for that year (along with new debt according to the optimal debt/total assets ratio), the firm should pay

- \* no dividends to common stockholders.
- \* dividends by borrowing the money (debt).
- \* dividends, in effect, out of a new issue of common stock.
- \* none of these answers are correct.
- \* no dividends except out of past retained earnings.

That answer is correct!

The residual dividend model is a model in which the dividend paid is set equal to the actual earnings minus the amount of retained earnings necessary to finance the firm's optimal capital budget. A firm follows 4 steps when using this model:

1. The optimal capital budget is determined.
2. The amount of equity needed to finance that budget, given its target capital structure, is determined.
3. Retained earnings are used to meet equity requirements to the extent possible.
4. Dividends are paid only if more earnings are available than are needed to support the optimal capital budget.

As long as the firm finances with the optimal mix of debt and equity, and provided it uses only internally generated equity (retained earnings), then the marginal cost of each new dollar of capital will be

minimized. Internally generated equity is available for financing some new investment, but beyond that amount, the firm must finance through more expensive common stock. At this point where new stock must be sold, the cost of equity and the marginal cost of capital, increases.

-----  
A cash outlay that has already been incurred and which cannot be recovered regardless of whether the project is accepted or rejected is known as which of the following terms?

- \* Incremental Cash Flow
- \* Externality
- \* Sunk Cost
- \* Opportunity Cost
- \* Cannibalization

That answer is incorrect.

Correct answer:

Sunk Cost

Sunk cost is defined as a cash outlay that has already been incurred and which cannot be recovered regardless of whether a project is accepted or rejected.

-----  
The management of Intelligent Semiconductor is examining the asset structure of its superconductor division, and has ascertained the following annual financial information:

Invoiced sales \$6,850,000  
EBITA \$3,525,000  
Interest expense \$150,000  
Amortization expense \$245,000

Given this information, which of the following best characterizes the Degree of Financial Leverage for this division?

- \* 1.048
- \* None of these answers is correct.
- \* 1.044
- \* .0.488
- \* 2.03

That answer is correct!

To calculate the DFL, the financial analyst needs to determine the EBIT and interest paid for a predetermined time period. To calculate the Degree of Financial Leverage, the following equation is used:  $\{EBIT/[EBIT - \text{interest paid}]\}$ . In this example, EBITA is provided rather than EBIT. Thankfully, however, a figure is given for amortization expense. To determine the EBIT, subtract the amortization expense from then EBITA figure, which gives a figure of \$3,280,000 for the EBIT. The next step is to incorporate the given information into the DFL equation as follows:  $\{EBIT \$3,280,000 / [EBIT \$3,280,000 - \text{interest expense } \$150,000]\}=1.048$

The Degree of Financial Leverage measures the percentage change in EPS which results from a given

percentage change in EBIT. Remember that any preferred stock dividends must be incorporated into the DFL calculation, and that the DFL can never be less than one.

-----

Sunk costs:

- \* should be ignored while evaluating a project.
- \* affect a project's desirability adversely.
- \* are incremental cash flows of the project under consideration.
- \* lower a project's NPV.

That answer is correct!

Sunk costs represent expenses that have already been incurred or committed to. Therefore, they are not pertinent to future decisions.

-----

The degree of operating leverage has which of the following characteristics?

- \* The DOL is not a fixed number for a given firm, but will depend upon the time zero values of the economic variables Q (Quantity), P (Price), and V (Volume).
- \* If the firm has no debt, the DOL will equal 1.
- \* The DOL relates the change in net income to the change in net operating income.
- \* The closer the firm is operating to breakeven quantity, the smaller the DOL.
- \* A change in quantity demanded will produce the same percentage change in EBIT as an identical change in price per unit of output, other things held constant.

That answer is correct!

Recall that  $DOL = [Q(P-V)]/[Q(P-V)-F]$ .

-----

Becker Glass Corporation expects to have earnings before interest and taxes during the coming year of \$1,000,000, and it expects its earnings and dividends to grow indefinitely at a constant annual rate of 12.5 percent. The firm has \$5,000,000 of debt outstanding bearing a coupon interest rate of 8 percent, and it has 100,000 shares of common stock outstanding. Historically, Becker has paid 50 percent of net earnings to common shareholders in the form of dividends. The current price of Becker's common stock is \$40, but it would incur a 10 percent flotation cost if it were to sell new stock. The firm's tax rate is 40 percent.

What is Becker's cost of newly issued stock?

- \* 17.5%
- \* 16.5%
- \* 16.0%
- \* 17.0%

\* 18.0%

That answer is correct!

Cost of new common equity:

$$k(e) = \$1.80/\$40.00(1-.10) + 0.125 = 17.5\%.$$

The dividend of \$1.80 was derived by:

EBIT	\$1,000,000
Interest 400,000	
EBT	\$600,000
Taxes (40%)	240,000
Net income	\$360,000

$$\text{EPS}(1) = \$360,000/100,000 = \$3.60.$$

$$D(1) = \$3.60(0.5) = \$1.80.$$

-----

Which of the following statements is most correct?

- \* None of the answers are correct.
- \* All of these answers are correct.
- \* If Project A has a higher IRR than Project B, then Project A must also have a higher NPV.
- \* The IRR calculation implicitly assumes that all cash flows are reinvested at a rate of return equal to the cost of capital.
- \* If a project's internal rate of return (IRR) exceeds the cost of capital, then the project's net present value (NPV) must be positive.

That answer is incorrect.

Correct answer:

If a project's internal rate of return (IRR) exceeds the cost of capital, then the project's net present value (NPV) must be positive.

The IRR on a project is its expected rate of return. If the return exceeds the cost of the funds used to finance the project, a surplus remains after paying for the capital, and this surplus accrues to the firm's stockholders. Therefore, a project whose IRR exceeds its cost of capital increases shareholders' wealth, just as a positive NPV does.

-----

The management of Microcam International, a large software manufacturer, is examining its capital structure. The firm is financed according to the following schedule based on market values:

- 40% debt
- 50% common stock
- 10% perpetual preferred stock

Additionally, consider the following information:

Yield on outstanding debt: 9.25%  
Tax rate: 35%  
Annual preferred dividend: \$2.02  
Preferred stock price: \$17.44  
Return on equity: 22%  
Dividend payout ratio: 15%  
Cost of common stock: 15.40%

Using this information, what is the Weighted Average Cost of Capital for Microscam?

- \* 11.08%
- \* 11.12%
- \* None of these answers.
- \* 10.88%
- \* 11.26%
- \* The answer cannot be completely calculated from the given information.

That answer is incorrect.

Correct answer:

11.26%

In order to calculate the WACC, it is necessary to first calculate the component after-tax cost of debt, common equity, and preferred equity. Once the cost of these components is determined, they are imputed into the WACC equation, which is as follows:

{WACC = [(% weight of debt securities \* cost of debt) + (% weight of common stock \* cost of common stock) + (% weight of preferred stock \* cost of preferred stock)]}

To calculate the component cost of debt, use the following equation:

{After-tax cost of debt = [yield on outstanding debt securities \* (1 - tax rate)]}

Factoring in the given information into this equation would yield the following:

{After-tax cost of debt = [9.25% \* (1 - 0.35%)]} = 6.013%

To calculate the component cost of outstanding preferred stock, the following equation must be used:

{Cost of preferred stock = [annual dividend / preferred stock price]}

{Cost of preferred stock - = [\$2.02 / \$17.44]} = 11.58%.

The final component of the WACC calculation, the cost of common equity, has been provided as 15.40%.

Now that the after-tax cost of debt, preferred stock, and common stock have been determined, the WACC calculation can be found. The calculation of the WACC is as follows:

{[0.40 \* 0.06013] + [0.50 \* 0.1540] + [0.10 \* 0.1158]} = 11.263%.

-----

Firm A has just paid a cash dividend of \$6.2 per share. If the growth rate is expected to be 6% and the price of the stock is \$24.90, the expected return on the stock is:

- \* 32.39%

- \* 26.39%
- \* 20.39%
- \* 24.90%

That answer is correct!

$P_0 = D_1 / (k - g)$ . In this case,  $g = 6\%$ ,  $D_1 = D_0 \cdot (1 + g) = 6.2 \cdot 1.06 = \$6.572$  and  $P_0 = \$24.90$ . Therefore,  $k = 32.39\%$ . Note that Brigham & Houston refer to  $k$  as the cost of retained earnings; this is the same as the expected rate of return demanded by shareholders, which is the same as the rate of return on common equity.

-----

When examining a capital project with non-normal cash flows from the perspective of IRR, some distinct problems can arise, which of the following choices best describes the problems that can occur when examining projects with non-normal cash flows using IRR?

- \* No IRR, an IRR which leads to an incorrect accept/reject decision, concave MIRR profile
- \* Multiple IRRs, an IRR which leads to an incorrect accept/reject decision, convex MIRR profile
- \* Multiple IRRs, no IRR
- \* Multiple IRRs, no IRR, an IRR which leads to an incorrect accept/reject decision
- \* Timing differences, project scale differences, multiple IRRs

That answer is incorrect.

Correct answer:

Multiple IRRs, no IRR, an IRR which leads to an incorrect accept/reject decision

When examining capital projects with non-normal cash flows, three distinct problems can occur: the project can have multiple IRRs, no IRR, or the calculation can lead to the production of an IRR figure which leads to an incorrect accept/reject decision. Thus, the second choice represents the most correct answer. "Timing differences" and "project scale differences" are two reasons for a conflict in the NPV and IRR calculations, and "MIRR profile" is a fictitious term.

-----

Consider the following two projects:

Project A

Initial cash outflow: \$1,000,000

Cash inflows as follows

t1: \$500,000

t2: \$450,000

t3: \$250,000

t4: \$150,000

t5: \$150,000

Project B

Initial cash outflow: \$1,000,000

Cash inflows as follows

t1: \$150,000  
t2: \$150,000  
t3: \$250,000  
t4: \$450,000  
t5: \$500,000

Assuming a cost of capital of 9%, no taxes, and a \$0.00 salvage value for each project at the end of year 5, what is the NPV of each project? Additionally, which of the two projects has the steeper NPV profile?

- \* Project A NPV: \$88,596.13, Project B NPV: \$110,900.51, Project A has a steeper NPV profile
- \* Project A NPV: \$114,078.88, Project B NPV: \$100,669.59, Project has B has a steeper NPV profile
- \* Project A NPV: \$234,270.95, Project B NPV: \$100,669.59 , Project A has a steeper NPV profile
- \* Project A NPV: \$234,270.95, Project B NPV: \$100,669.59, Project B has a steeper NPV profile
- \* Project A NPV: \$234,270.95, Project B NPV: \$100,669.59, Project A has a steeper NPV profile

That answer is incorrect.

Correct answer:

Project A NPV: \$234,270.95, Project B NPV: \$100,669.59, Project B has a steeper NPV profile

Due to the fact that project B has the majority of its cash inflows coming in later periods, it is more sensitive to changes in the cost of capital than is project A, which has the majority of its cash flows coming in earlier periods. This is exemplified by a steeper NPV profile.

-----

Clay Industries, a large industrial firm, has begun the development of an underwater drilling system which will greatly increase the efficiency of deep-sea petroleum extraction. In their analysis of the project's cash-flow potential, the corporate finance division of Clay Industries does not factor in the initial R&D costs for the quarter, rather examines only the initial cash outlay and expected cash inflows specific to the underwater drilling system. The R&D costs involved for this quarter could best be described as which of the following?

- \* Externality
- \* None of these answers
- \* Opportunity cost
- \* Implicit cost
- \* Sunk cost
- \* Incremental cost

That answer is incorrect.

Correct answer:

Sunk cost

In this example, the R&D expenditures are an example of a sunk cost. In an analysis of any project, sunk costs are not included. This is because sunk costs represent outlays which have already occurred or have already been committed. These costs are not incremental, and hence are not affected by the decision under consideration.

-----



Which of the following projects would likely result in multiple Internal Rates of Return?

Project A

Initial investment outlay: (\$450,000)

t1: \$400,000

t2: (\$40,000)

t3: \$190,000

Project B

Initial investment outlay: (\$50,000)

t1: \$0.00

t2: \$0.00

t3: \$75,000

Project C

Initial investment outlay: (\$300,000)

t1: \$15,000

t2: (\$34,000)

t3: \$0.00

t4: \$400,000

Project D

Initial investment outlay: (\$100,000)

t1: \$150,000

t2: \$380,000

t3: \$45,000

t4: \$45,000

Project E

Initial investment outlay: (\$1,000,000)

t1: \$1,500,000

t2: \$1,300

t3: \$0.00

t4: \$60,000

- \* None of these choices
- \* Project B, Project D
- \* The answer cannot be determined from the information provided
- \* Project C, Project E
- \* Project A, Project C,
- \* Project D, Project E

That answer is incorrect.

Correct answer:

Project A, Project C,

In evaluating projects with "non-normal cash flows" the Internal Rate of Return method will often produce multiple IRRs which leads to an incorrect accept/reject decision. Non-normal cash flows are defined as cash flows in which the sign changes more than once. Projects A, and C involve cash outflows superimposed within their cash inflows, resulting in a sign change from positive to negative and negative to positive. In examining projects such as these, it is advisable to use either the NPV or MIRR methods, which are not subject to the problem of multiple IRRs. From observation alone, we can determine that project A and C are non-normal projects, and are thus likely to result in multiple IRR calculations. While project B, D, and E have periods of zero cash flow, they have only one change of sign in the overall cash flow process, and therefore should be characterized as "normal."

While the cost of capital has been provided, it is not necessary for the determination of the correct answer in this case. What you should look for are projects with non-normal cash flows, and this should not involve any computational analysis. Besides, the cost of capital is not incorporated into the Internal Rate of Return calculation, rather is a component of the NPV and MIRR.

-----

The following information applies to a company's preferred stock:

Current price \$105.00 per share  
Par value \$100.00 per share  
Annual dividend \$5.00 per share

The company issued the preferred stock at par and incurred a 10% floatation cost. If the company's marginal corporate tax rate is 40%, what is the after-tax cost of preferred stock?

- \* 5.0%
- \* 10.0%
- \* 3.0%
- \* 4.8%
- \* 5.6%
- \* 2.9%

That answer is incorrect.

Correct answer:

5.6%

The cost of preferred stock is calculated as the preferred stock dividend divided by the net issuing price. The dividend for this preferred stock is \$5.00, and the net issuing price was \$90.00. Thus the cost of preferred stock is 5 divided by 90 or 5.6%. There are no tax savings associated with the use of preferred stock, therefore no tax adjustments are made when calculating the cost.

-----

Consider the following information:

Borrowing Rate 10%  
Marginal Tax Rate 40%  
Preferred Stock Par Price \$50  
Preferred Dividend \$5  
Preferred Stock floatation cost 2.0%  
Cost of common equity 15.0%  
Preferred Stock issued at Par  
The Optimal Capital Structure is 45% debt, 50% common equity, and 5% preferred stock.  
Credit Rating BB+

What is the firm's Weighted Average Cost of Capital (WACC)?

- \* 9.0%
- \* 7.14%
- \* 9.06%

- \* 10.71%
- \* 2.5%
- \* 28.00%

That answer is incorrect.

Correct answer:

10.71%

The firm's Weighted Average Cost of Capital (WACC) is a weighted average of the component cost of capital. In this case  $10\%(\text{borrowing rate}) \times (1-.4)\text{Tax savings} = 6\%$  is the component cost of debt.  $\$5$  (preferred dividend) /  $49(\text{Par minus floatation cost}) = 10.2\%$  is the component cost of preferred stock. Thus the  $\text{WACC} = .45(6\%) + .5(15\%) + .05(10.2\%) = 10.71\%$

-----

Which of the following is/are true for a project which needs only an initial outlay and no further expenses?

- I. The shorter the payback period, the greater the liquidity of the project.
- II. The discounted payback period is always more than the simple payback period.
- III. The payback period rule considers all the cash flows involved in a project.

- \* II & III
- \* II only
- \* I & II
- \* III only
- \* I & III
- \* I only
- \* I, II & III

That answer is incorrect.

Correct answer:

I & II

The payback period measures how quickly you recover your initial investment. The shorter this period, the greater the liquidity in terms of cash recovery. The payback rule ignores cash flows beyond the payback period.

The discounted payback period is defined as the expected number of years that would be required to recover the original investment using discounted cash flows. Hence, (II) is true if there are no negative cash flows after the initial investment since discounting reduces the present value of the future cash flows.

-----

Which of the following statements is correct?

- \* When the MCC (Marginal Cost of Capital) schedule is developed, the first break point always occurs as a result of using up retained earnings.
- \* Flotation costs must be included in the component cost of preferred stock.
- \* If a company with a debt ratio of 50 percent were suddenly exempted from all future income taxes, then, all other things held constant, this would cause its WACC to increase.
- \* The WACC (Weighted Average Cost of Capital) should include only after-tax component costs.

Therefore, the required rates of return on debt, preferred, and common equity must be adjusted to an after-tax basis before they are used in the WACC equation.

\* The cost of retained earnings is generally higher than the cost of new common stock.

That answer is incorrect.

Correct answer:

If a company with a debt ratio of 50 percent were suddenly exempted from all future income taxes, then, all other things held constant, this would cause its WACC to increase.

If a firm paid no income taxes, its cost of debt would not be adjusted downward, hence the component cost of debt would be higher than if  $T$  (the firm's marginal tax rate) were greater than 0. With a higher component cost of debt, the WACC would be increased. Of course, the company would have higher earnings, and its cash flows from a given project would be high, so the higher WACC would not impede its investments, i.e., its capital budget would be larger than if it were taxed.

-----

Your company is planning to open a new gold mine which will cost \$3 million to build, with the expenditure occurring at the end of the year. The mine will bring year-end after-tax cash inflows of \$2 million at the end of the two succeeding years, and then it will cost \$0.5 million to close down the mine at the end of the third year of operation. What is this project's IRR?

- \* 12.70%
- \* 14.36%
- \* 10.17%
- \* 21.53%
- \* 17.42%

That answer is correct!

Time line:

0	1	2	3
-3,000,000	2,000,000	2,000,000	-500,000

Financial calculator solution: (In millions)

Inputs:  $CF(0) = -3$ ;  $CF(1) = 2$ ;  $N(j) = 2$ ;  $CF(2) = -.5$ .

Output:  $IRR\% = 12.699\%$ .

-----

Firmica recently bought a fleet of trucks which fall in the 5-year MACRS class for \$135,000, with an additional \$10,000 for shipping, minor taxes and paperwork. The trucks are expected to last for 7 years and have a total salvage value of \$25,620. The recovery allowance for year 1 in the 5-year MACRS class is 20% and in the second year, it is 32%. In the second year, the depreciation expense arising from the fleet equals \_\_\_\_\_.

- \* \$46,400
- \* \$34,560
- \* \$43,200
- \* \$37,120

That answer is correct!

You should remember four things about MACRS:

1. Salvage value is never considered in calculating the depreciable basis.
2. The depreciable basis equals the purchase price plus all shipping and installation costs.
3. The depreciable basis does not change over the life of the asset in question.
4. Depreciation expense for any given year equals the allowed recovery percentage in that MACRS class times the depreciable basis.

Therefore, in this case, the depreciable basis equals  $\$135,000 + \$10,000 = \$145,000$  and the year 2 depreciation equals  $\$145,000 \times 32\% = \$46,400$ .

-----

Which of the following statements is correct?

- \* One can find the "cross-over rate," or the discount rate at which two normal projects have the same NPV, by finding the IRR of the differences in the projects' yearly cash flows.
- \* If you calculate a project's MIRR and find it to be the same as the regular IRR, you can be sure you made a mistake.
- \* If a project's IRR is less than its cost of capital, then the discounted payback period will be less than the regular payback period.
- \* If a project has a cash outflow at  $t = 0$  followed by a single cash inflow at  $t = 10$ , then the MIRR will be less than the regular IRR.
- \* If a project has a cash outflow at  $t = 0$  followed by a single cash inflow at  $t = 10$ , then the MIRR will be greater than the regular IRR.

That answer is correct!

The cross-over rate is the discount rate where two normal projects' NPV profiles intersect, thus, indicating the two projects have the same NPV at this point. This intersection point can be found as the IRR of the differences of the projects' annual cash flows. The other statements are false.

-----

Jackson Corporation is evaluating the following four independent, investment opportunities:

Project	Cost	Rate of Return
A	\$300,000	14%
B	\$150,000	10
C	\$200,000	13
D	\$400,000	11

Jackson's target capital structure is 60 percent debt and 40 percent equity. The yield to maturity on the company's debt is 10 percent. Jackson will incur flotation costs for a new equity issuance of 12 percent.

The growth rate is a constant 6 percent. The stock price is currently \$35 per share for each of the 10,000 shares outstanding. Jackson expects to earn net income of \$100,000 this coming year and the dividend payout ratio will be 50 percent. If the company's tax rate is 30 percent, then which of the projects will be accepted?

- \* All of the investment projects will be taken.
- \* Projects A, C, and D.
- \* Projects A and C.
- \* None of the investment projects will be taken.
- \* Project A.

That answer is incorrect.

Correct answer:

Project A.

Calculate the after-tax component cost of debt as  $10\%(1 - 0.3) = 7\%$ . If the company has earnings of \$100,000 and pays out 50% or \$50,000 in dividends, then it will retain earnings of \$50,000. The retained earnings breakpoint is  $\$50,000/0.4 = \$125,000$ . Since it will require financing in excess of \$125,000 to undertake any of the alternatives, we can conclude the firm must issue new equity. Therefore, the pertinent component cost of equity is the cost of new equity. Calculate the expected dividend per share as  $\$50,000/10,000 = \$5$ . Thus, the cost of new equity is  $\$5/[(\$35(1 - 0.12))] + 6\% = 22.23\%$ . Jackson's WACC is  $7\%(0.6) + 22.23\%(0.4) = 13.09\%$ . Only the return on Project A exceeds the WACC, so only Project A will be undertaken.

-----

When a project's NPV exceeds zero,

- \* the project should be accepted without any further consideration, assuming we are confident that the cash flows and the cost of capital have been properly estimated.
- \* all of the statements are correct.
- \* the IRR should be calculated to insure that the project's projected rate of return exceeds the cost of capital.
- \* none of the statements are correct.
- \* the project will also be acceptable using payback criteria.

That answer is correct!

If a project has a positive NPV, then it is generating more cash than is needed to service its debt and to provide the required return to shareholders, and this excess cash accrues solely to the firm stockholders.

-----

Helms Aircraft has a capital structure, which consists of 60 percent debt and 40 percent common stock. The company's equity financing will come from issuing new common stock. The company recently issued bonds with a yield to maturity of 9 percent. The company's stock is currently trading at \$40 a share. The year-end dividend is expected to be \$4 a share (that is,  $D(1) = \$4.00$ ), and the dividend is expected to grow at a constant rate of 5 percent. The flotation costs associated with issuing new common stock are estimated to be 10 percent. The company's tax rate is 35 percent. What is the company's weighted average cost of capital?

- \* 11.84%
- \* 10.98%
- \* 8.33%
- \* 9.51%
- \* 9.95%

That answer is incorrect.

Correct answer:

9.95%

Calculate the after-tax cost of debt =  $(1 - 0.35) 9\% = 5.85\%$ .

Calculate the cost of new equity:  $k(e) = \frac{\$4}{[\$40(1 - 0.1)]} + 0.05 = 0.1611$  or 16.11%.

Compute WACC (Weighted Average Cost of Capital):  $0.6(5.85\%) + 0.4(16.11\%) = 9.95\%$ .

-----

Copybold Corporation is a start-up firm considering two alternative capital structures--one is conservative and the other aggressive. The conservative capital structure calls for a D/A ratio = 0.25, while the aggressive strategy call for D/A = 0.75. Once the firm selects its target capital structure it envisions two possible scenarios for its operations: Feast or Famine. The Feast scenario has a 60 percent probability of occurring and forecast EBIT in this state is \$60,000. The Famine state has a 40 percent chance of occurring and the EBIT is expected to be \$20,000. Further, if the firm selects the conservative capital structure its cost of debt will be 10 percent, while with the aggressive capital structure its debt cost will be 12 percent. The firm will have \$400,000 in total assets, it will face a 40 percent marginal tax rate, and the book value of equity per share under either scenario is \$10.00 per share.

What is the coefficient of variation of expected EPS under the aggressive capital structure plan?

- \* 2.45
- \* 1.00
- \* 1.18
- \* 3.76
- \* 2.88

That answer is correct!

Calculate coefficient of variation

Expected EPS(Aggressive):

$E(\text{EPS}) = 0.6 \text{ EPS}(\text{Feast}) + 0.4 \text{ EPS}(\text{Famine}) = (0.6)(\$1.44) + 0.4(-\$0.96) = \$0.48.$

Standard deviation

$SD(\text{EPS-aggressive}) = [0.6(\$1.44 - \$0.48)^2 + 0.4(-\$0.96 - \$0.48)^2]^{1/2}$   
 $= [0.5530 + 0.8294]^{1/2} = 1.176.$

$CV(\text{Aggressive}) = 1.176/0.48 = 2.45.$

-----

Clay Industries, a large industrial firm, is evaluating the sales of its existing line of coiled machine tubing. In their analysis, the operating managers of Clay Industries have identified the following information related to the coiled machine tubing division and its product:

Average variable cost of \$100.50  
Average sales price of \$167.75  
Breakeven quantity of 15,985 units

Which of the following best describes the total fixed cost for this product?

- \* \$1,114,800
- \* The calculation of the total fixed production costs for this product cannot be calculated from the information given.
- \* \$875,000
- \* None of these answers is correct.
- \* \$925,000
- \* \$1,075,000

That answer is incorrect.

Correct answer:

\$1,075,000

To calculate the breakeven quantity for a product, use the following equation: {Fixed operating costs/[avg. sales price per unit - variable cost per unit]}. To determine the total fixed production cost of this product, we must rearrange the standard equation using algebra, in a manner such that the resulting equation resembles the following: [ $\$167.75 - \$100.50$ ] \* 15,985 units = X. Solving for X, which represents the total fixed production costs, yields an answer of \$1,075,000.

-----

Santorum Co. has a capital structure which consists of 50 percent debt, 30 percent common stock, and 20 percent preferred stock. The company's net income was just reported to be \$1,000,000. The company pays out 40 percent of its net income as dividends. How large of a capital budget can the company have, without having to issue additional common stock or change its capital structure?

- \* \$600,000
- \* \$2,000,000
- \* \$1,200,000
- \* \$200,000
- \* \$180,000

That answer is incorrect.

Correct answer:

\$2,000,000

The retained earnings break point indicates the size of the capital budget when not issuing additional common stock.  $BP(RE) = (\$1,000,000(1 - 0.4))/0.30 = \$2,000,000$ .

BP = break point; RE = retained earnings

-----

The management of Intelligent Semiconductor is considering two mutually exclusive projects, which are detailed below:



Project A  
Electron looping apparatus  
Initial investment outlay (\$6,000,000)  
t1: \$2,750,000  
t2: \$1,250,000  
t3: \$1,250,000  
t4: \$2,750,000  
Cost of capital of 10.55%

Project B  
Optical switching apparatus  
Initial investment outlay (\$5,040,000)  
t1: \$1,000,000  
t2: \$1,000,000  
t3: \$1,500,000  
t4: \$1,500,000  
t5: \$1,500,000  
t6: \$750,000  
t7: \$300,000  
t8: \$50,000  
Cost of capital of 10.55%

Assuming no taxes, a \$0.00 salvage value at the end of the each project's life, as well as the ability to replicate each project identically at the end of its lifespan, which is the superior investment according to the Common Life approach? Additionally, what are the NPV and IRR of the superior project over the common life?

- \* Project B, NPV \$305,221; IRR 13.65%
- \* None of these answers
- \* Project B, NPV \$287,725.32; IRR 12.38%
- \* Project A, NPV \$465,515; IRR 12.78%
- \* Project A, NPV \$462,038; IRR 12.72%

That answer is incorrect.  
Correct answer:  
Project A, NPV \$462,038; IRR 12.72%

The Replacement Chain, or "Common Life" approach, is a useful method which allows two or more projects with unequal lives to be examined. In the Replacement Chain approach, the lifespans of each project being examined are multiplied in such a way that the resulting projects share a "common life."

In this example, the Optical Switching apparatus has a lifespan of eight periods, while the electron looping apparatus has a four-period lifespan. The common multiple of both projects is 8, and by replicating the cash flows of the electron looping project through period 4, i.e. by carrying out the project for an additional cycle, we can arrive at a "common life" for both projects. Carrying out the electron-looping project through eight periods will yield the following series of cash flows:

Electron looping apparatus  
t0: (\$6,000,000)  
t1: \$2,750,000  
t2: \$1,250,000  
t3: \$1,250,000  
t4: [\$2,750,000 + (\$6,000,000)] = (\$3,250,000)  
t5: \$2,750,000  
t6: \$1,250,000

t7: \$1,250,000

t8: \$2,750,000

By incorporating these cash flows into your calculator, you will find a NPV of \$462,038 for this project, as well as an IRR of 12.72%. The Optical Switching apparatus has a NPV of \$287,725 and an IRR of 12.38%.

-----

The Bird-in-the Hand theory implies that as the dividend pay-out ratio is increased, the cost of equity:

- \* decreases.
- \* increases or decreases.
- \* increases.
- \* remains unaffected.

That answer is correct!

The Bird-in-the Hand theory implies that as the dividend pay-out ratio is increased, the stock price decreases and hence, the cost of equity increases.

-----

Two fellow financial analysts are evaluating a project with the following net cash flows:

Year	Cash Flow
0	-\$10,000
1	100,000
2	-100,000

One analyst says that the project has an IRR of between 12 and 13 percent. The other analyst calculates an IRR of just under 800 percent, but fears his calculator's battery is low and may have caused an error. You agree to settle the dispute by analyzing the project cash flows. Which statement best describes the IRR for this project?

- \* There are multiple IRRs of approximately 12.7 percent and 787 percent.
- \* There are an infinite number of IRRs between 12.5 percent and 790 percent that can define the IRR for this project.
- \* There is a single IRR of approximately 12.7 percent.
- \* This project has two imaginary IRRs.
- \* This project has no IRR, because the NPV profile does not cross the X axis.

That answer is correct!

This problem can be solved numerically but requires an iterative process of trial and error using the possible solutions provided in the problem.

Investigate first claim: Try  $k = \text{IRR} = 13\%$  and  $k = 12.5\%$

$$\text{NPV}(k = 13\%) = -10,000 + 100,000/1.13 - 100,000/(1.13)^2 = 180.91.$$

$$\text{NPV}(k = 12.5\%) = -10,000 + 100,000/1.125 - 100,000/(1.125)^2 = -123.46.$$

The first claim appears to be correct. The IRR of the project appears to be between 12.5% and 13.0%.

Investigate second claim: Try  $k = 800\%$  and  $k = 780\%$

$$\begin{aligned} \text{NPV}(k = 800\%) &= -10,000 + 100,000/9 - 100,000/(1 + 8)^2 \\ &= -10,000 + 11,111.11 - 1,234.57 = -123.46. \end{aligned}$$

$$\begin{aligned} \text{NPV}(k = 780\%) &= -10,000 + 100,000/8.8 - 100,000/(1 + 7.8)^2 \\ &= -10,000 + 11,363.64 - 1,291.32 = 72.32. \end{aligned}$$

The second claim also appears to be correct. The IRR of the project flows also appears to be above 780% but below 800%.

Below is a table of various discount rates and the corresponding NPVs.

Discount rate (%)	NPV
12.0	(\$433.67)
12.5	(123.46)
12.7	(1.02) IRR(1) = 12.7%
13.0	180.91
25.0	6,000.00
400.0	6,000.00
800.0	(123.46)
787.0	2.94 IRR(2) = 787%
780.0	72.32

By randomly selecting various costs of capital and calculating the project's NPV at these rates, we find that there are two IRRs, one at about 787 percent and the other at about 12.7 percent, since the NPVs are approximately equal to zero at these values of  $k$ . Thus, there are multiple IRRs.

-----  
Which of the following statements is most correct?

- \* Sunk costs should be ignored in capital budgeting.
- \* None of these answers are correct.
- \* Externalities should be ignored in capital budgeting.
- \* All of these answers are correct.
- \* Opportunity costs should be ignored in capital budgeting.

That answer is correct!

Sunk costs should be ignored. The other statements are false.

-----  
The management of Intelligent Semiconductor is considering the creation of a new manufacturing facility. The following information applies to the new facility:

Initial investment outlay: (\$50,200,000)

$t_1$ : (\$3,000,000)

t2: (\$1,500,000)  
t3: \$12,000,000  
t4: \$20,000,000  
t5: \$25,000,000  
t6: \$25,000,000  
t7: \$20,000,000  
t8: (\$1,500,000)  
t9: (\$3,000,000)  
t10: \$500,000

Assuming a 15% discount rate, along with a \$0.00 salvage value at the end of year 10, what is the Modified Internal Rate of Return for this project?

- \* 13.19%
- \* 9.88%
- \* 12.66%
- \* 14.61%
- \* 13.90%
- \* Because this is a non-normal project, the Modified Internal Rate of Return cannot be calculated.

That answer is incorrect.

Correct answer:

13.90%

Remember that the Modified Internal Rate of Return escapes many of the pitfalls associated with the traditional Internal Rate of Return calculation. One such pitfall is the fact that the traditional IRR cannot produce reliable calculations for "non-normal" projects, such as the project illustrated in this example. The Modified Internal Rate of Return, however, escapes this basic flaw and can be used to evaluate virtually any project.

The calculation of the answer in this example is as follows:

Step 1:

Determine the Future Value of the cash inflows by compounding each positive inflow by the cost of capital. This value is often referred to as the "Terminal Value." Remember that in this example, the positive cash inflows begin at period 3.

Step 2:

Determine the Present Value of the cash outflows by discounting each negative inflow by the cost of capital. The cash inflows to be discounted occur in periods 1, 2, 8, and 9.

Step 3:

Determine the rate that equates the PV of the cash outflows to the FV of the cash inflows.

The calculation of the FV of the cash inflows is shown as follows:

$$\text{FV of the cash inflows} = \{[\$12,000,000 * 2.660] + [\$20,000,000 * 2.313] + [\$25,000,000 * 2.011] + [\$25,000,000 * 1.749] + [\$20,000,000 * 1.521] + [\$500,000 * 1]\} = \$203,100,000.$$

This is the terminal value.

The calculation of the PV of the cash outflows is calculated as follows:

$$\text{PV of the cash outflows} = \{ \$50,200,000 + [\$3,000,000 / 1.15] + [\$1,500,000 / 1.323] + [\$1,500,000 / 3.059] + [\$3,000,000 / 3.518] \} = \$55,285,596.07$$

Now that the present and future (terminal) values of the cash flows have been determined, the Modified Internal Rate of Return can take place. The following values are imputed into the Present Value worksheet on your calculator:

PV = (\$55,285,596), FV = \$203,100,000, N = 10, PMT = \$0.00, Compute I.

Imputing these values will yield an answer of 13.896% for the Modified Internal Rate of Return.

-----

A firm has issued a perpetuity with a total face value of 100 million dollars and a coupon rate of 5.8%. If the risk free rate equals 5.8% and investors require a rate of return of 10.6% from the perpetuity, what's the amount the firm raised through the issue?

- \* \$55.28 million
- \* none of these answers
- \* \$100 million
- \* \$54.72 million

That answer is incorrect.

Correct answer:

\$54.72 million

The price of a perpetuity that pays C per year, at a discount rate of R, equals C/R. Hence, the price of the perpetuity issue =  $\$(100 \times 5.8\% / 10.6\%)$  million = \$54.72 million.

-----

Merryweather, a manufacturer of summer casual wear, has a return on equity of about 10.6%. It typically pays out about 27% of its earnings as dividends. The firm's stock has a beta of +0.23. The market has an expected return of 16.2% and the prevailing risk-free rate is 6.9%. Merryweather recently announced that last year's EPS was \$4.3 per share. Given these data, Merryweather's share price should be:

- \* \$91.19
- \* \$84.84
- \* \$96.07
- \* \$78.29

That answer is incorrect.

Correct answer:

\$96.07

The dividend growth rate,  $g = ROE \times (1 - \text{payout ratio}) = 0.106 \times (1 - 0.27) = 7.738\%$ .

The dividend this year was  $4.3 \times 0.27 = \$1.16$ . Therefore, expected dividend next year =  $D_1 = (1 + g) \times D_0 = 1.07738 \times 1.16 = \$1.25$ .

The required rate of return on the stock can be found using CAPM, which gives

$R_{\text{stock}} = R_f + \text{beta} \times (R_m - R_f) = 6.9\% + 0.23 \times (16.2\% - 6.9\%) = 9.039\%$ .

Therefore,  $P_0 = D_1 / (k - g) = 1.25 / (9.039\% - 7.738\%) = \$96.07$ .

-----

Which of the following statements is correct?

\* It is unrealistic to expect that increases in net working capital that are required at the start of an expansion project are simply recovered at the project's completion. Thus, these cash flows are included only at the start of a project.

\* Equipment sold for more than its book value at the end of a project's life will increase income and, despite increasing taxes, will generate a greater cash flow than if the same asset is sold at book value.

\* All of these statements are false.

\* An asset that is sold for less than book value at the end of a project's life will generate a loss for the firm and will cause an actual cash outflow attributable to the project.

\* Only incremental cash flows are relevant in project analysis and the proper incremental cash flows are the reported accounting profits because they form the true basis for investor and managerial decisions.

That answer is incorrect.

Correct answer:

Equipment sold for more than its book value at the end of a project's life will increase income and, despite increasing taxes, will generate a greater cash flow than if the same asset is sold at book value.

A gain on the sale occurs when equipment is sold for more than its book value. This increases profit and cash flow.

-----

Which of the following is/are true about the DOL?

I. The DOL measures the change in EBIT for a given change in the quantity sold.

II. The DOL is zero at the break-even level.

III. The DOL decreases as the level of sales increases.

\* I only

\* II & III

\* I, II & III

\* III only

\* II only

That answer is incorrect.

Correct answer:

III only

The DOL measures the percentage change in EBIT for a given percentage change in the quantity sold. At a sales level of Q units,  $DOL = Q(P-V)/[Q(P-V) - FC]$  Hence, at the break-even level, the DOL is infinite but decreases as the sales increase.

-----

Which of the following statements is most correct?

\* In estimating net cash flows for the purpose of capital budgeting, interest payments should not be included since the effects of these payments are already included in the weighted average cost of capital.

\* Capital budgeting analysis for expansion and replacement projects is essentially the same because the types of cash flows involved are the same.

\* When equipment is sold, companies receive a tax credit as long as the salvage value is less than the initial cost of the equipment.

\* All of the answers are correct.

\* None of the answers are correct.

That answer is correct!

In a capital budgeting analysis interest payments are excluded because the discount rate used in the analysis is the WACC--which includes the cost of debt. To include interest would be to double count and would lead to a downward bias. Cash flows for replacement projects should include the market value of the old equipment, the difference in depreciation between the 2 machines, and the foregone salvage value related to the old machine at the end of its useful life. These are cash flows that would not be included in an expansion project analysis. Companies receive a tax refund for equipment sold only when the equipment's market value is less than its book value, its undepreciated balance.

-----  
Javier Corporation is considering a project with the following cash flows:

Time	Cash Flow
0	-\$13,000
1	12,000
2	8,000
3	7,000
4	-1,500

The firm's cost of capital is 11 percent. What is the project's modified internal rate of return (MIRR)?

\* 21.68%

\* 23.78%

\* 24.90%

\* 25.93%

\* 16.82%

That answer is incorrect.

Correct answer:

24.90%

First, find PV of all cash outflows:

PV of CF(0) is -\$13,000. PV of CF(4) is -1,500 discounted at 11% for 4 periods or -\$988.10. Thus, the PV of all cash outflows is -\$13,988.10.

Second, find the FV at t = 4 of all cash inflows:

The sum of these cash inflows is the project's terminal value.

FV of CF(1) at t = 4 is found by entering N = 3, I = 11, PV = -12,000, and PMT = 0. Then solve for FV = \$16,411.57. Similarly, the FVs at t = 4 of CF(2) and CF(3) are found to be \$9,856.80 and \$7,770.00, respectively. Thus, the projects TV = \$16,411.57 + \$9,856.80 + \$7,770.00 = \$34,038.37.

To find the MIRR, enter N = 4, PV = -13,988.10, PMT = 0, and FV = 34,038.37, which yields I/YR = MIRR = 24.90%.

-----  
Elephant Books sells paperback books for \$7 each. The variable cost per book is \$5. At current annual sales of 200,000 books, the publisher is just breaking even. It is estimated that if the authors' royalties are reduced, the variable cost per book will drop by \$1. Assume authors' royalties are reduced and sales remain constant; how much more money can the publisher put into advertising (a fixed cost) and still break even?

- \* \$175,225
- \* \$200,000
- \* \$600,000
- \* \$333,333
- \* \$466,667

That answer is incorrect.

Correct answer:

\$200,000

$$\begin{aligned} \$7(200,000) - \$5(200,000) - F &= 0 \\ F &= \$400,000. \end{aligned}$$

$$\begin{aligned} \$7(200,000) - \$4(200,000) - F &= 0 \\ F &= \$600,000. \end{aligned}$$

$$\$600,000 - \$400,000 = \$200,000.$$

-----  
Which of the following statements is correct?

\* To find a firm's marginal cost of capital for capital budgeting purposes, we would develop an MCC and an IOS schedule, find the WACC at the intersection of the two curves, and define that WACC to be the corporate cost of capital. However, this procedure will not lead to a meaningful answer if the firm uses debt.

\* If a project has only costs (no revenues) as would certain environmental projects, then the project is likely to have two regular IRRs but only one MIRR.

\* In general, the PVs of riskier cash flows should be found using relatively high discount rates. However, if a cash flow is non-normal (cash inflows followed by cash outflows), a lower discount rate should be used to evaluate risky projects.

\* It is better to use the NPV method to evaluate independent projects, but for mutually exclusive projects, especially if projects vary greatly in size, the MIRR method is better.

\* Firms A and B have identical balance sheets and income statements, pay the same rate of interest, have the same cost of retained earnings,  $k(s)$ , and have the same very good set of investment opportunities. However, Firm A pays out only 20 percent of its earnings versus an 80 percent payout for Firm B. Firm A will probably have the higher marginal cost of capital schedule.

That answer is incorrect.

Correct answer:

In general, the PVs of riskier cash flows should be found using relatively high discount rates. However, if a cash flow is non-normal (cash inflows followed by cash outflows), a lower discount rate should be used to evaluate risky projects.



The other statements are incorrect because of the following: A project that has only costs has no IRR. The WACC incorporates the cost of all capital: debt, preferred stock, and equity. The NPV method is best used to evaluate mutually exclusive projects of varying size because the MIRR method may produce a conflicting result from the NPV in this situation. Firm B will have the higher cost of capital because it has the higher payout forcing it to go to more costly equity capital before Firm A.

-----

Mooradian Corporation estimates that its cost of capital is 11 percent. The company is considering two mutually exclusive projects whose after-tax cash flows are as follows:

Year	Project S	Project L
0	-\$3,000	-\$9,000
1	2,500	-1,000
2	1,500	5,000
3	1,500	5,000
4	-500	5,000

What is the modified internal rate of return (MIRR) of the project with the highest NPV?

- \* 18.25%
- \* 11.89%
- \* 20.12%
- \* 16.01%
- \* 13.66%

That answer is incorrect.

Correct answer:

20.12%

Use cash flow registers to determine the NPV of each project:

$NPV(S) = \$1,237.11$ ;  $NPV(L) = \$1,106.82$ .

Since  $NPV(S) > NPV(L)$  we need to calculate MIRR(S).

Calculate the PV of cash outflows:

$CF(0) = -3,000$ ;  $CF(1-3) = 0$ ;  $CF(4) = -500$ ;  $I = 11$ . Solve for  $NPV = \$3,329.37$ .

Calculate the TV of cash inflows:

First find the cumulative PV, then take forward as a lump sum to find the TV.

Solve for  $NPV = \$4,566.47$ .

Calculate TV or FV:  $N = 4$ ;  $I = 11$ ;  $PV = -4,566.47$ ;  $PMT = 0$ .

Solve for  $FV = \$6,932.22$ .

Calculate MIRR:  $N = 4$ ;  $PV = -3,329.37$ ;  $PMT = 0$ ;  $FV = 6,932.22$ .

Solve for  $MIRR = I = 20.12\%$ .

-----

Calculate the weighted average cost of capital (WACC) for a firm with the following capital structure:

10% Preferred stock

50% Common equity

40% Debt  
Tax rate 40%  
Before tax cost of debt 12%  
The cost of common equity is 15%  
Cost of preferred stock 10%

- \* 7.2%
- \* 12.33%
- \* 11.38%
- \* 7.98%
- \* 13.3%

That answer is incorrect.  
Correct answer:  
11.38%

A firm's weighted average cost of capital (WACC) = the cost of each component of capital weighted by the proportion of that component in the firm's capital structure. In this case  $WACC = (\text{after tax cost of debt} \times 40\%) + (\text{cost of common equity} \times 50\%) + (\text{cost of preferred stock} \times 10\%) = (12\% \times 60\% \times 40\%) + (15\% \times 50\%) + (10\% \times 10\%) = 2.88\% + 7.5\% + 1\% = 11.38\%$ .

-----

You have been asked by the president of your company to evaluate the proposed acquisition of a new special-purpose truck. The truck's basic price is \$50,000, and it will cost another \$10,000 to modify it for special use by your firm. The truck falls into the MACRS three-year class, and it will be sold after three years for \$20,000. Use of the truck will require an increase in net working capital (spare parts inventory) of \$2,000. The truck will have no effect on revenues, but it is expected to save the firm \$20,000 per year in before-tax operating costs, mainly labor. The firm's marginal tax rate is 40 percent.

What is the net investment in the truck?

- \* -\$65,000
- \* -\$50,000
- \* -\$52,600
- \* -\$55,800
- \* -\$62,000

That answer is incorrect.  
Correct answer:  
-\$62,000

Initial investment:

Cost	(\$50,000)
Modification	(10,000)
Change in NWC	(2,000)
Total net investment =	(\$62,000)

-----

Which of the following characteristics is not necessary for the NPV and MIRR calculations to consistently produce similar results?

- \* Projects must have cash flows
- \* Projects must have equal lifespans
- \* Project must be of equal scale
- \* Projects must be of equal size
- \* Projects must be independent

That answer is incorrect.

Correct answer:

Projects must be independent

When examining mutually-exclusive projects with normal cash flows, the MIRR and NPV methods will ALWAYS produce similar results as long as the projects being examined are equal in size and have the same life. It is not necessary for projects to be independent in order for the NPV and MIRR methods to produce similar results.

-----

Which of the following events is likely to encourage a corporation to increase its debt ratio?

- \* An increase in the personal tax rate.
- \* An increase in the expected cost of bankruptcy.
- \* Increased uncertainty about the level of sales and output prices.
- \* An increase in the corporate tax rate.
- \* An increase in the company's degree of operating leverage.

That answer is incorrect.

Correct answer:

An increase in the corporate tax rate.

A major reason for using debt is that interest is deductible, which lowers the effective cost of debt. An increase in the corporate tax rate will increase the tax savings from using debt. An interest increase in the personal tax rate will make interest income less attractive. An increase in operating leverage, bankruptcy costs, and uncertainty about sales and output prices will encourage the firm to decrease financial leverage.

-----

Of the commonly-employed methods for evaluating capital projects, which of the following offers the most useful, reliable, and germane results for the financial analyst?

- \* Internal Rate of Return
- \* Discounted Payback Period
- \* Net Present Value
- \* Payback Period

That answer is incorrect.

Correct answer:

## Net Present Value

In analyzing capital projects, particular weight should be given to Net Present Value (NPV) calculations, as this method is viewed as the most reliable and realistic of the four major capital budgeting analysis methods. Net Present Value calculations are superior to Internal Rate of Return calculations in that NPV works regardless of the size or timing of cash flows, and has a more flexible incorporation of the appropriate discount rate. Payback period should be viewed as the most inferior of the four methods, as it does not incorporate the "time-value of money" principle into its calculation. The Discounted Payback Period is only a slightly improved version of the basic Payback Period.

-----  
Which of the following statements is most correct?

- \* Corporations should fully account for sunk costs when making investment decisions.
- \* All of the answers are correct.
- \* The rate of depreciation will not affect operating cash flows, because depreciation is not a cash expense.
- \* Corporations should fully account for opportunity costs when making investment decisions.
- \* None of the answers are correct.

That answer is incorrect.

Correct answer:

Corporations should fully account for opportunity costs when making investment decisions.

Cash flow = Net income + depreciation; therefore, depreciation affects operating cash flows. Sunk costs should be disregarded when making investment decisions, while opportunity costs should be considered when making investment decisions, as they represent the best alternative use of an asset.

-----  
Martin Manufacturers is considering a five-year investment, which costs \$100,000. The investment will produce cash flows of \$25,000 each year for the first two years ( $t = 1$  and  $t = 2$ ), \$50,000 a year for each of the remaining three years ( $t = 3$ ,  $t = 4$ , and  $t = 5$ ). The company has a cost of capital of 12 percent. What is the MIRR of the investment?

- \* 19.45%
- \* 12.10%
- \* 16.00%
- \* 18.25%
- \* 14.33%

That answer is correct!

Step 1 Find the FV of cash inflows:

$$\begin{aligned}(\$25,000)(1.12)^4 &= \$39,337.98 \\ (25,000)(1.12)^3 &= 35,123.20 \\ (50,000)(1.12)^2 &= 62,720.00 \\ (50,000)(1.12) &= 56,000.00 \\ (50,000) &= 50,000.00\end{aligned}$$

$$\text{Future Value} = \$243,181.18$$

Alternatively, with a financial calculator you can find the FV of the cash inflows by first finding the NPV of these inflows and then finding the FV of their NPV.

$$\begin{aligned} \text{CF}(0) &= 0 \\ \text{CF}(1-2) &= 25,000 \\ \text{CF}(3-5) &= 50,000 \\ I &= 12 \end{aligned}$$

Solve for NPV = \$137,987.53.

$$\begin{aligned} N &= 5 \\ I &= 12 \\ PV &= -137,987.53 \\ PMT &= 0 \end{aligned}$$

Solve for FV = \$243,181.18.

Step 2 Find the IRR which equates the cash inflows and outflows:

$$\begin{aligned} N &= 5 \\ PV &= -100,000 \\ PMT &= 0 \\ FV &= 243,181.18 \\ \text{Solve for } I &= 19.45\%. \end{aligned}$$

-----  
Which of the following is false?

- \* All of these answers.
- \* The IRR and NPV rules do not always give the same project rankings.
- \* A project with a higher IRR is always preferable to a project with a lower IRR.
- \* Both IRR and NPV rules are based on cash flow discounting.

That answer is incorrect.

Correct answer:

A project with a higher IRR is always preferable to a project with a lower IRR.

You should always use the NPV criterion for selecting projects. The IRR method can give project rankings different from the NPV criterion depending on the type of cash flows of the project as well as the cost of capital involved. Further, a project with a higher NPV at the project's cost of capital can have a lower IRR than another project with lower NPV. Therefore, (III) is false.

-----  
Which of the following cannot be eliminated through diversification?

- I. Stand-alone risk
- II. Unsystematic risk
- III. Systematic risk

- IV. Market risk
- V. Beta risk
- VI. Corporate risk
- VII. Alpha risk
- VIII. Gamma risk

\* I, II, V, VII, VIII

\* I, III, IV, VI, VII, VIII

\* I, II, V, VI

\* II, III, VI

\* III, IV, V

That answer is incorrect.

Correct answer:

III, IV, V

Of the various components of asset risk, only systematic risk cannot be diversified away. Systematic risk measures that part of asset risk that is inherent regardless of the level of diversification, and is measured by the Beta coefficient. Systematic risk is also referred to as "market risk" and "beta risk."

Corporate risk is defined as the variability of an asset's expected returns without taking into consideration the effects of shareholder diversification. This is one step away from Stand-alone Risk, which measures the risk of an asset, not only without taking into consideration the effect of shareholder diversification, but of company diversification as well. Stand-alone risk assumes that the asset in question is the only asset of the firm and that the securities of the firm are the only assets in investors' portfolios. Corporate risk takes into consideration that firms will diversify their asset bases.

Stand-alone risk is defined as the variability of an asset's expected returns if it were the only asset of a firm and the stock of that firm was the only security in an investor's portfolio. This type of risk is definitively reduced through diversification, and is commonly referred to as "unsystematic risk."

-----

Which of the following firms has the highest degree of financial leverage?

Firm A

EBIT: \$1,000,000

Interest Paid: \$50,000

Total Operating Expenses: \$900,000

Fixed Operating Expenses: \$350,000

Firm B

EBIT: \$490,000

Interest Paid: \$15,000

Total Operating Expenses: \$300,000

Fixed Operating Expenses: \$180,000

Firm C

EBIT: \$1,500,000

Interest Paid: \$75,000

Total Operating Expenses: \$3,000,000

Fixed Operating Expenses: \$2,250,000

Firm D

EBIT: \$875,000  
Interest Paid: \$75,000  
Total Operating Expenses: \$3,000,000  
Fixed Operating Expenses: \$2,000,000

Firm E  
EBIT: \$1,250,000  
Interest Paid: \$90,000  
Total Operating Expenses: \$2,900,000  
Fixed Operating Expenses: \$1,750,000

- \* Firm E
- \* Firm C
- \* Firm D
- \* Firm B
- \* Firm A

That answer is incorrect.

Correct answer:

Firm D

The Degree of Financial Leverage (DFL) measures the percentage change in EPS that results from a given percentage change in EBIT. Financial Leverage is the second component of total leverage, along with Operating Leverage. The equation used to calculate the Degree of Financial Leverage is as follows:  $\{DFL = [EBIT / (EBIT - Interest Paid)]\}$ .

In this example, Firm D has the highest DFL, with a figure of 1.09375. Remember that the Degree of Financial Leverage can never be less than one, and can never be negative. In a situation where the company under examination has zero interest expense, the DFL would be equal to one, i.e. the EBIT is equal to the EBIT minus the interest expense. Another important note to remember is that in calculating the Degree of Financial Leverage, dividend payments to preferred stockholders should be included in the interest expense figure. Operating expenses are not factored into the DFL calculation, rather are used in the determination of Operating Leverage.

-----

Which of the following factors affect a firm's cost of capital?

- \* Tax rates
- \* Investment Policy
- \* All of these answers
- \* Dividend Policy
- \* The level of interest rates
- \* Capital Structure Policy

That answer is incorrect.

Correct answer:

All of these answers

Each of these factors may affect a firm's cost of capital. As interest rates rise, the cost of debt will also rise forcing firms to pay a higher rate of interest on debt capital (bonds). Tax rates also affect the cost of debt. Furthermore, a lower capital gains tax rate relative to ordinary income tax rates will affect the cost of equity capital relative to the cost of debt capital. Capital structure policy will affect the weighted average

cost of capital (WACC), as well as affect the riskiness of both equity and debt capital. A change in the level of capital risk will in turn also affect the WACC. Dividend policy including the level of dividends and stability of dividends will have a direct affect on the cost of equity capital. Finally, a firm's WACC is affected by its investment policy. The types of investments that a firm undertakes and the riskiness of those investments are reflected in the WACC.

-----

Which of the following correctly describes the risk of a project, disregarding the fact that it is but one asset within the total asset portfolio of a firm, and that the firm is but one stock in a typical investment portfolio?

- \* Systematic risk
- \* Alpha coefficient
- \* None of these answers
- \* Stand-alone risk
- \* Corporate risk
- \* Unsystematic risk

That answer is incorrect.  
Correct answer:  
Stand-alone risk

Stand-alone risk is defined as the risk of an individual project disregarding the fact that the project is but one asset within the total asset portfolio of a firm, and that the firm is but one stock within the investment portfolio of a typical investor. Stand-alone risk is measured by the variability of the project's expected returns, and is intuitive in nature. Alpha represents the change in the price of an asset independent of the change in the market. Systematic risk is also referred to as "undiversifiable" or "market" risk. Unsystematic risk is risk that can be diversified away, i.e. firm-specific risk. Corporate, or "within-firm" risk, is defined as the risk of individual projects to a corporation, taking into consideration the fact that each project represents only one of the firm's total asset portfolio. In examining corporate risk, there is an implicit assumption that some of the total risk to the firm's profits from the addition of new projects will be partially diversified away. Corporate risk is measured by the project's impact on uncertainty about the firm's future earnings.

-----

The length of time required for an investment's cash flows, discounted at the investment's cost of capital, to cover its cost is known as \_\_\_\_\_.

- \* Weighted Average Cost of Capital (WACC)
- \* Payback Period
- \* Discounted Payback Period
- \* Net Present Valuing
- \* Optimal Capital Structure
- \* Capital Budgeting

That answer is incorrect.  
Correct answer:  
Discounted Payback Period

Discounted Payback Period is defined as the length of time required for an investment's cash flows,



discounted at the investment's cost of capital, to cover its cost.

-----

In an examination of several capital projects, the management of a large international conglomerate attempts to calculate the Weighted Average Cost of Capital for the firm. The Company is capitalized according to the following schedule based on market values:

55% debt  
36% common stock  
9% perpetual preferred stock

Additionally, assume the following information:

Yield on outstanding debt: 8.95%  
Tax rate: 35%  
Annual preferred dividend: \$0.70  
Preferred stock price: \$8.90  
Return on equity: 17.36%  
Dividend payout ratio: 45%  
Cost of common stock: 15.10%

Using this information, what is the WACC for this large multinational conglomerate?

- \* 10.11%
- \* 9.34%
- \* None of these answers.
- \* 9.29%
- \* 9.78%
- \* The answer cannot be completely calculated from the information provided.

That answer is incorrect.

Correct answer:  
9.34%

In order to calculate the WACC, it is necessary to first calculate the component cost of debt, common equity, and preferred equity. Once the cost of these components is determined, they are imputed into the WACC equation, which is as follows:

{WACC = [(% weight of debt securities \* cost of debt) + (% weight of common stock \* cost of common stock) + (% weight of preferred stock \* cost of preferred stock)]}

To calculate the component cost of debt, use the following equation:

{Cost of debt = [yield on outstanding debt securities \* (1 - tax rate)]}

Factoring in the given information into this equation would yield the following:

{After-tax cost of debt = [8.95% \* (1 - 0.35%)]} = 5.818%

To calculate the component cost of outstanding preferred stock, the following equation must be used:

{Cost of preferred stock = [annual dividend / preferred stock price]}

{Cost of preferred stock - = [ $\$0.70 / \$8.90$ ]} = 7.865%.

The final component of the WACC calculation, the cost of common equity, has been provided as 15.10%.

Now that the after-tax costs of debt, preferred stock, and common stock have been determined, the WACC calculation can be found. The calculation of the WACC is as follows:

{ $[0.55 * 0.05818] + [0.36 * 0.1510] + [0.09 * 0.07865]$ } = 9.344%.

-----

Pierce Products is deciding whether it makes sense to purchase a new piece of equipment. The equipment costs \$100,000 (payable at  $t = 0$ ). The equipment will provide before-tax cash inflows of \$45,000 a year at the end of each of the next four years ( $t = 1, 2, 3, 4$ ). The equipment can be depreciated according to the following schedule:

$t = 1: 0.33$   
 $t = 2: 0.45$   
 $t = 3: 0.15$   
 $t = 4: 0.07$

At the end of four years the company expects to be able to sell the equipment for a salvage value of \$10,000 (after-tax). The company is in the 40 percent tax bracket. The company has an after-tax cost of capital of 11 percent. Since there is more uncertainty about the salvage value, the company has chosen to discount the salvage value at 12 percent. What is the net present value of purchasing the equipment?

- \* \$22,853.90
- \* \$9,140.78
- \* \$28,982.64
- \* \$20,564.23
- \* \$16,498.72

That answer is correct!

First, find the after-tax CFs associated with the project. This is accomplished by subtracting the depreciation expense from the raw CF, reducing this net CF by taxes and then adding back the depreciation expense.

For  $t = 1$ :  $(\$45,000 - \$33,000)(1 - 0.4) + \$33,000 = \$40,200$ .

Similarly, the after-tax CFs for  $t = 2$ ,  $t = 3$ , and  $t = 4$  are \$45,000, \$33,000, and \$29,800, respectively.

Now, enter these CFs along with the cost of the equipment to find the pre-salvage NPV (note that the salvage value is not yet accounted for in these CFs). The appropriate discount rate for these CFs is 11%. This yields a pre-salvage NPV of \$16,498.72.

Finally, the salvage value must be discounted. The PV of the salvage value is:  $N = 4$ ,  $I = 12$ ,  $PMT = 0$ ,  $FV = -10,000$ , and  $PV = \$6,355.18$ . Adding the PV of the salvage amount to the pre-salvage NPV yields the project NPV of \$22,853.90.

-----

The most commonly held view of capital structure, according to the text, is that the weighted average cost

of capital \_\_\_\_\_.

- \* increases proportionately with increases in leverage
- \* does not change with leverage
- \* none of these answers
- \* increases with moderate amounts of leverage and then falls
- \* first falls with moderate levels of leverage and then increases

That answer is incorrect.

Correct answer:

first falls with moderate levels of leverage and then increases

The optimal capital structure must strike a balance between risk and return which maximizes the firm's stock price. Using more debt raises the risk borne by stockholders, however, using more debt leads to a higher expected rate of return.

-----

You are considering the purchase of an investment that would pay you \$5,000 per year for Years 1-5, \$3,000 per year for Years 6-8, and \$2,000 per year for Years 9 and 10. If you require a 14 percent rate of return, and the cash flows occur at the end of each year, then how much should you be willing to pay for this investment?

- \* \$21,937.26
- \* \$32,415.85
- \* \$38,000.00
- \* \$15,819.27
- \* \$52,815.71

That answer is correct!

$$\begin{aligned} PV &= \$5,000(PVIFA(14\%,5)) + \$3,000(PVIFA(14\%,3))(PVIF(14\%,5)) \\ &\quad + \$2,000(PVIFA(14\%,2))(PVIF(14\%,8)) \\ &= \$5,000(3.4331) + \$3,000(2.3216)(0.5194) + \$2,000(1.6467)(0.3506) \\ &= \$17,165.50 + \$3,617.52 + \$1,154.67 = \$21,937.69. \end{aligned}$$

-----

Interstate Transport has a target capital structure of 50 percent debt and 50 percent common equity. The firm is considering a new independent project which has an IRR of 13 percent and which is not related to transportation. However, a pure play proxy firm has been identified that is exclusively engaged in the new line of business. The proxy firm has a beta of 1.38. Both firms have a marginal tax rate of 40 percent, and Interstate's before-tax cost of debt is 12 percent. The risk-free rate is 10 percent, and the market risk premium is 5 percent. The firm should

- \* Be indifferent between accepting or rejecting; the firm's required rate of return on the project equals its expected return.
- \* Accept the project; its IRR exceeds the risk-free rate and the before-tax cost of debt.
- \* Accept the project; its IRR is greater than the firm's required rate of return on the project of 12.05 percent.
- \* Reject the project; its IRR is less than the firm's required rate of return on the project of 16.9 percent.

\* Reject the project; its IRR is only 13 percent.

That answer is incorrect.

Correct answer:

Accept the project; its IRR is greater than the firm's required rate of return on the project of 12.05 percent.

Calculate the required return,  $k(s)$ , and use to calculate the WACC:

$$k(s) = 10\% + 1.38(5\%) = 16.9\%.$$

$$WACC = 0.5(12.0\%)(0.6) + 0.5(16.9\%) = 12.05\%.$$

Compare expected project return, to WACC:

Accept the project since IRR (13%) is more than the WACC (12.05%).

-----

Consider the following information for a company.

Common Stock Price \$75.50  
Preferred Stock Par Price \$100  
Preferred Dividend \$4.0  
Debt Rating BB+  
Owners Equity 12.27%  
Preferred Stock Flotation Cost 2.0%  
The Preferred Stock is issued at Par

Calculate the component cost of this newly issued preferred stock.

- \* 6.57%
- \* 4.0%
- \* 7.0%
- \* 3.92%
- \* 18.78%
- \* 4.08%
- \* 12.27%

That answer is incorrect.

Correct answer:

4.08%

The component cost of preferred stock is the dividend divided by issue price minus flotation cost. In this case the component cost of preferred stock =  $\$4.00 / (100 - 2) = 4.08\%$ .

-----

Which of the following statements is most correct?

- \* All these statements are false.
- \* The degree of total leverage (DTL) is equal to the DOL plus the degree of financial leverage (DFL).

\* Arithmetically, financial leverage and operating leverage offset one another so as to keep the degree of total leverage constant. Therefore, the formula shows that the greater the degree of financial leverage, the smaller the degree of operating leverage.

\* All these statements are true.

\* The degree of operating leverage (DOL) depends on a company's fixed costs, variable costs, and sales. The DOL formula assumes (1) that fixed costs are constant and (2) that variable costs are a constant proportion of sales.

That answer is incorrect.

Correct answer:

The degree of operating leverage (DOL) depends on a company's fixed costs, variable costs, and sales. The DOL formula assumes (1) that fixed costs are constant and (2) that variable costs are a constant proportion of sales.

DOL is the % change in EBIT that results from a given % change in sales, while DFL is the % change in EPS that results from a given % change in EBIT. If no debt were used, the DFL would be 1.0.

-----

Which of the following statements is most correct?

\* All of these answers are correct.

\* Increasing the amount of debt in a firm's capital structure is likely to increase the cost of both debt and equity financing.

\* The optimal capital structure maximizes EPS.

\* If the after-tax cost of equity financing exceeds the after-tax cost of debt financing, firms are always able to reduce their WACC by increasing the amount of debt in their capital structure.

\* The optimal capital structure minimizes the cost of equity.

That answer is incorrect.

Correct answer:

Increasing the amount of debt in a firm's capital structure is likely to increase the cost of both debt and equity financing.

Increases in the debt ratio increase the cost of both debt and equity. Bondholders recognize that firms with higher debt levels are more likely to experience financial problems, which will explain why increases in the debt ratio raise the cost of debt. Concerning the cost of equity, the business risk premium, in the required rate of return equation, does not depend on the debt level. It will remain constant at all debt levels.

However, the financial risk premium does vary depending on the debt level; the higher the debt level, the greater the risk premium, and therefore the higher the cost of equity.

-----

Delphinium Inc.'s target capital structure has a debt ratio of 60 percent. The firm can raise up to \$100,000 in new debt at a before-tax cost of 8.5 percent. If more than \$100,000 of debt is required, the cost will be 9 percent. Net income last year was \$100,000, and it is expected to continue to grow each year at a rate of 10 percent indefinitely. The firm expects to maintain its dividend payout ratio of 40 percent on the 10,000 shares of common stock outstanding.

If it must sell new common stock, it would encounter a 15 percent flotation cost on the first \$400,000, and a 20 percent cost if more than \$400,000 of new outside equity is required. Delphinium's tax rate is 30

percent, and its current stock price is \$88 per share. The firm has an unlimited number of projects, which will earn a 10.25 percent return. What is this year's capital budget if the firm invests to the point where the Marginal Cost of Capital (MCC) intersects the Investment Opportunity Schedule (IOS)?

- \* The company has an infinite capital budget.
- \* \$1,000,000
- \* \$1,165,000
- \* \$400,000
- \* \$1,150,000

That answer is incorrect.

Correct answer:

\$1,165,000

Step 1 Find the break points for the problem. There will be three break points: one for retained earnings, one for debt, and one for the change in flotation costs of new stock.

Step 2 Calculate the component costs of capital:

We know NI = \$100,000 and there are 10,000 shares, therefore  $E(0) = \$100,000/10,000 = \$10$ . Also, the payout ratio is 40% so  $D(0)$  is \$4.  $D(1) = D(0)(1 + g) = \$4(1.1) = \$4.40$ .

$$k(s) = D1/P0 + g = \$4.40/\$88 + 10\% = 15\%.$$

$$k_e(1) = D1/P0(1 - F1) + g = \$4.40/\$88(1 - 0.15) + 10\% = 15.88\%.$$

$$k_e(2) = D1/P0(1 - F2) + g = \$4.40/\$88(1 - 0.20) + 10\% = 16.25\%.$$

$$k_d(1) = 8.5\%(1 - T) = 8.5\%(0.7) = 5.95\%.$$

$$k_d(2) = 9\%(1 - T) = 9\%(0.7) = 6.30\%.$$

Step 3 Calculate the marginal costs of capital:

$$MCC(1) = w(ce)k(s) + w(d)k(d1) = 0.4(15.00\%) + 0.6(5.95\%) = 9.57\%.$$

$$MCC(2) = w(ce)k(e1) + w(d)k(d1) = 0.4(15.88\%) + 0.6(5.95\%) = 9.92\%.$$

$$MCC(3) = w(ce)k(e1) + w(d)k(d2) = 0.4(15.88\%) + 0.6(6.30\%) = 10.13\%.$$

$$MCC(4) = w(ce)k(e2) + w(d)k(d2) = 0.4(16.25\%) + 0.6(6.30\%) = 10.28\%.$$

MCC    Applicable Range

- |   |                         |
|---|-------------------------|
| 1 | \$0 through \$165,000   |
| 2 | \$165,000 - \$166,667   |
| 3 | \$166,667 - \$1,165,000 |
| 4 | over \$1,165,000        |

Since the IRR of all projects is given as 10.25% the point where the MCC intersects the IOS is \$1,165,000, where the MCC jumps from 10.13% to 10.28%.

-----  
Which of the following statements is most correct?

- \* The NPV method assumes that cash flows will be reinvested at the risk-free rate while the IRR method assumes reinvestment at the IRR.
- \* The NPV method assumes that cash flows will be reinvested at the cost of capital while the IRR method assumes reinvestment at the risk-free rate.
- \* The NPV method does not consider the inflation premium.
- \* The IRR method does not consider all relevant cash flows, and particularly cash flows beyond the payback period.
- \* The NPV method assumes that cash flows will be reinvested at the cost of capital while the IRR method

assumes reinvestment at the IRR.

That answer is incorrect.

Correct answer:

The NPV method assumes that cash flows will be reinvested at the cost of capital while the IRR method assumes reinvestment at the IRR.

The NPV method implicitly assumes that the rate at which cash flows can be reinvested is the cost of capital, whereas the IRR method assumes that the firm can reinvest at the IRR.

-----

Byron Corporation's present capital structure, which is also its target capital structure, is 40 percent debt and 60 percent common equity. Next year's net income is projected to be \$21,000, and Byron's payout ratio is 30 percent. The company's earnings and dividends are growing at a constant rate of 5 percent; the last dividend was \$2.00; and the current equilibrium stock price is \$21.88. Byron can raise all the debt financing it needs at 14 percent. If Byron issues new common stock, a 20 percent flotation cost will be incurred. The firm's marginal tax rate is 40 percent.

What is the component cost of the equity raised by selling new common stock?

- \* 12.0%
- \* 16.4%
- \* 14.6%
- \* 15.0%
- \* 17.0%

That answer is incorrect.

Correct answer:

17.0%

$k(e)$  (component cost of external equity) =  $(\$2.10/\$21.88(1-.20)) + 0.05 = 17\%$ .

-----

Which of the following is/are true about dividend policies?

- I. Under the Bird-in-the-Hand theory, stocks with lower pay-out ratios have higher required rates of return.
- II. Under the Tax Preference theory, stocks with lower pay-out ratios have lower required rates of return.
- III. Under the Modigliani-Miller theory, the price of a stock does not change with a change in the dividend policy.

- \* II only
- \* I & II
- \* I, II & III
- \* I & III
- \* I only
- \* III only
- \* II & III

That answer is incorrect.

Correct answer:

I & III

(II) is not necessarily true when the capital gains tax is higher than realized income tax.

-----

The management of Allcycles.com, a motorcycle supply chain, is examining several capital projects. The firm is financed according to the following schedule based on market values:

60% debt  
35% common stock  
5% perpetual preferred stock

Additionally, consider the following information:

Yield on outstanding debt: 10.12%  
Tax rate: 35%  
Annual preferred dividend: \$0.64  
Preferred stock price: \$7.36  
Return on equity: 18%  
Dividend payout ratio: 25%  
Cost of common stock: 16.33%

Using this information, what is the Weighted Average Cost of Capital for Allcycles.com?

- \* 10.55%
- \* The answer cannot be completely calculated from the given information.
- \* 9.98%
- \* 10.04%
- \* None of these answers.
- \* 10.10%

That answer is incorrect.

Correct answer:

10.10%

In order to calculate the WACC, it is necessary to first calculate the component after-tax cost of debt, common equity, and preferred equity. Once the cost of these components is determined, they are imputed into the WACC equation, which is as follows:

{WACC = [(% weight of debt securities \* cost of debt) + (% weight of common stock \* cost of common stock) + (% weight of preferred stock \* cost of preferred stock)]}

To calculate the component after-tax cost of debt, use the following equation:

{Cost of debt = [yield on outstanding debt securities \* (1 - tax rate)]}

Factoring in the given information into this equation would yield the following:

{After-tax cost of debt = [10.12% \* (1 - 0.35%)]} = 6.578%



To calculate the component cost of outstanding preferred stock, the following equation must be used:

{Cost of preferred stock = [annual dividend / preferred stock price]}

{Cost of preferred stock - = [ $\$0.64 / \$7.36$ ]} = 8.70%.

The final component of the WACC calculation, the cost of common equity, has been provided as 16.33%.

Now that the after-tax cost of debt, preferred stock, and common stock have been determined, the WACC calculation can be found. The calculation of the WACC is as follows:

{ $[0.60 * 0.06578] + [0.35 * 0.1633] + [0.05 * 0.0870]$ } = 10.10%.

-----

Which of the following rules are essential to successful cash flow estimates, and ultimately, to successful capital budgeting?

- \* All of the statements are correct.
- \* Only incremental cash flows are relevant to the accept/reject decision.
- \* The return on invested capital is the only relevant cash flow.
- \* None of the statements are correct.
- \* Total cash flows are relevant to capital budgeting analysis and the accept/reject decision.

That answer is incorrect.

Correct answer:

Only incremental cash flows are relevant to the accept/reject decision.

Incremental cash flows are the net cash flows attributable to an investment project and are the only cash flows relevant in capital budgeting.

-----

Becker Glass Corporation expects to have earnings before interest and taxes during the coming year of \$1,000,000, and it expects its earnings and dividends to grow indefinitely at a constant annual rate of 12.5 percent. The firm has \$5,000,000 of debt outstanding bearing a coupon interest rate of 8 percent, and it has 100,000 shares of common stock outstanding. Historically, Becker has paid 50 percent of net earnings to common shareholders in the form of dividends. The current price of Becker's common stock is \$40, but it would incur a 10 percent flotation cost if it were to sell new stock. The firm's tax rate is 40 percent.

What is the firm's cost of retained earnings?

- \* 15.0%
- \* 15.5%
- \* 16.5%
- \* 16.0%
- \* 17.0%

That answer is incorrect.

Correct answer:

17.0%

EBIT	\$1,000,000
Interest	400,000
EBT	\$600,000
Taxes (40%)	240,000
Net income	\$360,000

$$\text{EPS}(1) = \$360,000/100,000 = \$3.60.$$

$$\text{D}(1) = \$3.60(0.5) = \$1.80.$$

$$k(s) = (\$1.80/\$40.00) + 0.125 = 17.0\%.$$

-----

Plato Inc. expects to have net income of \$5,000,000 during the next year. Plato's target capital structure is 35 percent debt and 65 percent equity. The company's director of capital budgeting has determined that the optimal capital budget for the coming year is \$6,000,000. If Plato follows a residual dividend policy to determine the coming year's dividend, then what is Plato's payout ratio?

- \* None of these answers are correct
- \* 0.38
- \* 0.33
- \* 0.58
- \* 0.42

That answer is correct!

If the firm's optimal capital budget requires \$6,000,000 in financing, then, to stay at its target capital structure, Plato will retain earnings of \$6,000,000 x 0.65 = \$3,900,000. This leaves \$5,000,000 - \$3,900,000 = \$1,100,000 available for dividends. Thus, Plato's payout ratio is \$1,100,000/\$5,000,000 = 0.22 = 22%.

-----

Which of the following methods for examining a project's stand-alone risk cannot be effectively conducted without the use of a random number generator? Choose the best answer.

- \* Probability Analysis
- \* More than one of these answers is correct
- \* Monte Carlo Regression
- \* Monte Carlo Simulation
- \* Scenario Analysis
- \* Sensitivity Analysis

That answer is incorrect.

Correct answer:

Monte Carlo Simulation

Monte Carlo Simulation seeks to examine the NPV of a project throughout a large series of possible values for input variables. When measuring stand-alone risk using Monte Carlo Simulation, the use of a

computer and rather complex software package is necessary. In Monte Carlo Simulation, the expected ranges of input variables are specified, and random numbers are incorporated into the analysis function, producing a NPV value across a wide range of possible situations. Monte Carlo Simulation is so named because the technique evolved largely from methods used to analyze probabilities in casino gambling. Scenario analysis involves the establishment of a "best case" and "worst case" scenario, which is compared to a predetermined "base case." Sensitivity Analysis seeks to determine the sensitivity of a project's NPV to changes in specific input variables, and "Probability Analysis" can be conducted using simple statistical formulas. None of these three methods require the use of a random number generator.

-----

Which of the following is not expressly incorporated into the Degree of Total Leverage (DTL) calculation?

- \* Earnings-per-Share
- \* Interest expense
- \* Variable costs
- \* None of these answers
- \* Fixed costs
- \* Sales

That answer is correct!

The Degree of Total Leverage (DTL) calculation measures the percentage change in EPS from a given percentage change in sales. The equation used to produce DTL is as follows:  $\{DTL = [(Sales - Variable Costs) / (Sales - Variable Costs - Fixed Costs - Interest Expense)]\}$ . Of all the choices listed, only EPS is not expressly incorporated into the DTL calculation.

-----

The management of Allcycles.com, a publicly-traded motorcycle supply shop, are trying to determine the beta for the company's carbon-steel exhaust systems division. Assume the following information.

Best Cycles (a diversified motorcycle shop)  
Beta Coefficient: 1.01  
Alpha Coefficient: 1.13  
WACC 13%

Listin, Delp & Company (a manufacturer of carbon-steel exhaust systems)  
Beta Coefficient 1.13  
Alpha Coefficient: 1.07  
WACC: 12.50%

Harmon, Inc. (a manufacturer of carbon-steel exhaust systems)  
Beta Coefficient 1.35  
Alpha Coefficient: 0.95  
WACC 13.50%

Using this information, what is the expected beta for the carbon-steel exhaust systems division of Allcycles.com?

- \* 1.24
- \* 1.05

\* 1.01

\* 1.16

\* The answer cannot be determined from the information provided.

That answer is correct!

The calculation of the Beta Coefficient under the Pure Play Method involves three steps.

First, companies are identified whose sole business is congruent to the product or division being examined. Second, the beta of each company is calculated. Lastly, the betas of the "pure-play" firms are averaged to find an approximation of the beta for the project or division in question.

In this example, only two of the firms provided should be considered as "pure-plays." These two firms are Listen, Delp & Company; and Harmon, Inc. While Best Cycles is in the same line of business as Allcycles, they are a diversified firm rather than a "pure-play" when it comes to the product in question.

Once the beta for Listen, Delp & Company; and Harmon, Inc. are averaged, the beta figure Allcycles.com's carbon-steel exhaust systems division for is found to be 1.24.

-----

Michigan Mattress Company is considering the purchase of land and the construction of a new plant. The land, which would be bought immediately (at  $t = 0$ ), has a cost of \$100,000 and the building, which would be erected at the end of the first year ( $t = 1$ ), would cost \$500,000. It is estimated that the firm's after-tax cash flow will be increased by \$100,000 starting at the end of the second year, and that this incremental flow would increase at a 10 percent rate annually over the next 10 years. What is the approximate payback period?

\* 4 years

\* 6 years

\* 2 years

\* 10 years

\* 8 years

That answer is incorrect.

Correct answer:

6 years

Payback =  $5 + 135.9/146.41 = 5.928$  years = 6 years.

-----

Doherty Industries wants to invest in a new computer system. The company only wants to invest in one system, and has narrowed the choice down to System A and System B.

System A requires an up-front cost of \$100,000 and then generates positive after-tax cash flows of \$60,000 at the end of each of the next two years. The system can be replaced every two years with the cash inflows and outflows remaining the same.

System B also requires an up-front cost of \$100,000 and then generates positive after-tax cash flows of \$48,000 at the end of each of the next three years. System B can be replaced every three years, but each time the system is replaced, both the cash inflows and outflows increase by 10 percent.

The company needs a computer system for the six years, after which time the current owners plan on retiring and liquidating the firm. The company's cost of capital is 11 percent. What is the NPV (on a six-year extended basis) of the system, which creates the most value to the company?

- \* \$31,211.52
- \* \$103,065.82
- \* \$17,298.30
- \* \$38,523.43
- \* \$22,634.77

That answer is correct!

To find the NPV of the system we must use the replacement chain approach.

Time	System A	System B
0	-100,000	-100,000
1	60,000	48,000
2	60,000 - 100,000 = -40,000	48,000
3	60,000	48,000 - 110,000 = -62,000
4	60,000 - 100,000 = -40,000	52,800
5	60,000	52,800
6	60,000	52,800

Use the CF key to enter the cash flows for each period. I/YR = 11. This should give the following NPVs:

NPV(A) = \$6,796.93.  
 NPV(B) = \$31,211.52.

Computer system B creates the most value for the firm.

-----

Rollins Corporation is constructing its MCC (marginal cost of capital) schedule. Its target capital structure is 20 percent debt, 20 percent preferred stock, and 60 percent common equity. Its bonds have a 12 percent coupon, paid semiannually, a current maturity of 20 years, and sell for \$1,000. The firm could sell, at par, \$100 preferred stock, which pays a 12 percent annual dividend, but flotation costs of 5 percent would be incurred. Rollins' beta is 1.2, the risk-free rate is 10 percent, and the market risk premium is 5 percent. Rollins is a constant growth firm, which just paid a dividend of \$2.00, sells for \$27.00 per share, and has a growth rate of 8 percent. The firm's policy is to use a risk premium of 4 percentage points when using the bond-yield-plus-risk-premium method to find k(s) (component cost of retained earnings). The firm's net income is expected to be \$1 million, and its dividend payout ratio is 40 percent. Flotation costs on new common stock total 10 percent, and the firm's marginal tax rate is 40 percent.

What is Rollins' cost of retained earnings using the CAPM (Capital Asset Pricing Model) approach?

- \* 16.0%
- \* 14.1%
- \* 16.9%
- \* 16.6%
- \* 13.6%

That answer is correct!

Cost of retained earnings (CAPM approach):  $k(s)$  (component cost of retained earnings) =  $10\% + 1.2(5\%) = 16.0\%$ .

-----

Copybold Corporation is a start-up firm considering two alternative capital structures--one is conservative and the other aggressive. The conservative capital structure calls for a D/A ratio = 0.25, while the aggressive strategy call for D/A = 0.75. Once the firm selects its target capital structure it envisions two possible scenarios for its operations: Feast or Famine. The Feast scenario has a 60 percent probability of occurring and forecast EBIT in this state is \$60,000. The Famine state has a 40 percent chance of occurring and the EBIT is expected to be \$20,000. Further, if the firm selects the conservative capital structure its cost of debt will be 10 percent, while with the aggressive capital structure its debt cost will be 12 percent. The firm will have \$400,000 in total assets, it will face a 40 percent marginal tax rate, and the book value of equity per share under either scenario is \$10.00 per share.

What is the difference between the EPS forecasts for Feast and Famine under the conservative capital structure?

- \* \$2.20
- \* \$0.80
- \* \$0
- \* \$0.44
- \* \$1.00

That answer is incorrect.

Correct answer:

\$0.80

Debt = 25% = \$100,000; Equity = 75% = \$300,000; Total assets = \$400,000.

	Feast	Famine
Probability	0.6	0.4
EBIT	\$60,000	\$20,000
Less: Interest	10,000	10,000
EBT	\$50,000	\$10,000
Less: Taxes	20,000	4,000
NI	\$30,000	\$6,000
# shares	30,000	30,000
EPS	\$1.00	\$0.20

Difference in EPS for conservative capital structure:

$EPS(\text{Feast}) - EPS(\text{Famine}) = \$1.00 - \$0.20 = \$0.80$ .

-----

Shannon Industries is considering a project, which has the following cash flows:

Time	Cash Flow
0	?
1	\$2,000
2	3,000
3	3,000
4	1,500

The project has a payback of 2.5 years. The firm's cost of capital is 12 percent. What is the project's net present value NPV?

- \* \$3,765.91
- \* \$765.91
- \* \$577.68
- \* \$1,049.80
- \* \$2,761.32

That answer is incorrect.

Correct answer:

\$765.91

First, find the missing  $t = 0$  cash flow. If payback = 2.5 years, this implies  $t = 0$  cash flow must be  $-\$2,000 - \$3,000 + (0.5)\$3,000 = -\$6,500$ . Enter the cash flows and the firm's cost of capital of 12%, then NPV = \$765.91.

-----  
For a given percentage change in EBIT, which of the following firms would have the most dramatic change in Earnings Per Share (EPS)?

Firm A

EBIT: \$1,110,000

Interest Paid: \$85,000

Total Operating Expenses: \$2,000,000

Fixed Operating Expenses: \$1,250,000

Firm B

EBIT: \$900,000

Interest Paid: \$87,000

Total Operating Expenses: \$1,950,000

Fixed Operating Expenses: \$1,110,000

Firm C

EBIT: \$1,500,000

Interest Paid: \$450,000

Total Operating Expenses: \$6,000,000

Fixed Operating Expenses: \$4,750,000

Firm D

EBIT: \$9,795,000

Interest Paid: \$750,000

Total Operating Expenses: \$20,000,000  
Fixed Operating Expenses: \$15,000,000

Firm E  
EBIT: \$9,195,000  
Interest Paid: \$660,000  
Total Operating Expenses: \$15,000,000  
Fixed Operating Expenses: \$9,875,000

- \* Firm C
- \* Firm E
- \* Firm B
- \* Firm A
- \* Firm D

That answer is correct!

This question is asking you to calculate the Degree of Financial Leverage for each company. The Degree of Financial Leverage (DFL) measures the percentage change in EPS that results from a given percentage change in EBIT. Financial Leverage is the second component of total leverage, along with Operating Leverage. The equation used to calculate the Degree of Financial Leverage is as follows:  $\{DFL = [EBIT/(EBIT - Interest\ Paid)]\}$ .

In this example, Firm C has the highest DFL by a wide margin, with a figure of 1.42857. This is markedly higher than the other firms. When calculating the DFL figure, remember that the answer can never be less than one, and can never be negative. In a situation where the company under examination has zero interest expense, the DFL would be equal to one; i.e. the EBIT is equal to the EBIT minus the interest expense. Another important note to remember is that in calculating the Degree of Financial Leverage, dividend payments to preferred stockholders should be included in the interest expense figure.

Operating expenses are not factored into the DFL calculation, rather are used in the determination of Operating Leverage.

-----

Which of the following statements is most correct? The modified IRR (MIRR) method:

- \* All of these answers are correct.
- \* Calculates a return that is always less than the regular IRR.
- \* Overcomes the problem of multiple rates of return.
- \* Always leads to the same ranking decision as NPV for independent projects.

That answer is incorrect.

Correct answer:

Overcomes the problem of multiple rates of return.

MIRR assumes that cash flows from all projects are reinvested at the cost of capital, while the regular IRR assumes that the cash flows from each project are reinvested at the project's own IRR. The MIRR is a better indicator of profitability because reinvestment at the cost of capital is generally more correct.

-----



Which of the following statements is likely to encourage a firm to increase its debt ratio?

- \* Management believes that the firm's stock is overvalued.
- \* Its corporate tax rate declines.
- \* Its sales become less stable over time.
- \* None of these answers are correct.
- \* All of these answers are correct.

That answer is incorrect.

Correct answer:

None of these answers are correct.

None of these would promote an increase in the debt ratio of a firm. Less stable sales would lead a firm to lower its debt ratio. A lower corporate tax rate reduces the tax advantage of the deductibility of interest expense. This reduction in the tax shield provided by debt would encourage less use of debt. If management believes the firm's stock is overvalued, then it would want to issue equity, rather than debt.

-----

The following information applies to a company's preferred stock:

Current price \$48.00 per share  
Par value \$50.00 per share  
Annual dividend \$3.50 per share

The company issued the preferred stock at par and incurred a 10% floatation cost. If the company's marginal corporate tax rate is 34%, what is the after-tax cost of preferred stock at the time of issue?

- \* 4.6%
- \* 5.1%
- \* 7%
- \* 7.8%
- \* 7.3%
- \* 3.5%

That answer is incorrect.

Correct answer:

7.8%

The cost of preferred stock is calculated as the preferred stock dividend divided by the net issuing price. The dividend for this preferred stock is \$3.50, and the net issuing price was \$45.00. Thus the cost of preferred stock is 3.5 divided by 45 or 7.8%. There are no tax savings associated with the use of preferred stock, therefore no tax adjustments are made when calculating the cost.

-----

Makeover Inc. believes that at its current stock price of \$16.00 the firm is undervalued in the market. Makeover plans to repurchase 2.4 million of its 20 million shares outstanding. The firm's managers expect that they can repurchase the entire 2.4 million shares at the expected equilibrium price after repurchase. The firm's current earnings are \$44 million. If management's assumptions hold, what is the expected

market price after repurchase?

- \* \$16.00
- \* \$17.26
- \* \$20.00
- \* \$18.18
- \* \$24.40

That answer is incorrect.

Correct answer:

\$18.18

Step 1: Current EPS = \$44 million/20 million = \$2.20 per share.

Step 2: P/E ratio = \$16.00/\$2.20 = 7.27x.

Step 3: EPS after repurchase = \$44 million/17.6 million = \$2.50.

Step 4: Expected market price after repurchase: 7.27 x \$2.50 = \$18.18 per share.

-----

If you were to argue that the firm's cost of equity increases as the dividend payout decreases, you would be making an argument \_\_\_\_\_ with MM's dividend irrelevance theory, and \_\_\_\_\_ with Gordon and Lintner's "bird-in-the-hand" theory.

- \* consistent; consistent
- \* consistent; inconsistent
- \* the argument does not make sense; neither theory involves the cost of equity capital
- \* inconsistent; consistent
- \* inconsistent; inconsistent

That answer is incorrect.

Correct answer:

inconsistent; consistent

The main conclusion of MM's irrelevance theory is that dividend policy does not affect the required rate of return on equity. Gordon-Lintner disagreed stating that  $k(s)$  decreases as the dividend payout is increased because investors are less certain of receiving the capital gains which should result from retaining earnings than they are of receiving dividends. They said that investors value expected dividends more highly than expected capital gains because the dividend yield is less risky than the growth component in the total expected return equation,  $k(s) = D1/P_0 + g$ .

MM disagreed and theorized that  $k(s)$  is independent of dividend policy, implying that investors are indifferent between dividends and capital gains. MM called the Gordon-Lintner's study the bird-in-the-hand fallacy, because MM thought the riskiness of the firm's cash flows to investors in the long run is determined by the riskiness of the operating cash flows, not by dividend policy.

-----

In a recent press release, the management of Intelligent Semiconductor have announced their intention on an engaging a rather liberal debt offering, which will bring the proportion of debt within their capital structure from 35% to 50%.

According to the Signaling Theory, his decision should be viewed as which of the following? Choose the best answer.

- \* The Signaling Theory would not apply to this announcement.
- \* Bullish, because it indicates superior investment prospects for the firm.
- \* Bearish, because it is indicative of a shift toward a more liberal capital structure.
- \* Bearish, because this will increase the financial risk of the firm.
- \* Bullish, because it is indicative of a shift toward a more conservative capital structure.
- \* Bearish, because it indicates poor investment prospects for the firm.

That answer is incorrect.

Correct answer:

Bullish, because it indicates superior investment prospects for the firm.

According to the Signaling Theory, the management of companies send implicit signals to investors by their capital budgeting decisions. Believers of this theory feel that corporate managers have access to superior information, and are allowed to exploit this information asymmetry through their capital budgeting decisions. According to the signaling theory, when investment prospects are good, companies will prefer to raise capital first by using internally generated funds, i.e. retained earnings and marketable securities investments. If this source of capital is unavailable, then companies will prefer to issue debt rather than common or preferred equity. The reasoning behind this is the fact that by raising debt, the company will not dilute the ROE figure, which is expected to be high due to favorable investment prospects.

In contrast, when investment prospects are poor, the Signaling Theory states that companies will prefer to raise funds first by issuing common equity. The reasoning behind this is the fact that by issuing additional equity when investment prospects are poor, companies will be able to "spread the losses" amongst a greater pool of investors, thereby lessening the overall negative effect of the poor investment prospects.

In this example, the management of Intelligent Semiconductor has announced its intention on issuing more debt. According to the Signaling Theory, this should be viewed as an indication that the firm has superior investment prospects.

While the decision to issue more debt is indicative of a shift toward a more liberal capital structure, and the issuance of this debt will increase the financial risk of the firm, both of which are somewhat bearish, neither represent the best answer.

-----

"Operating leverage" refers to:

- \* the degree of reliance on debt capital.
- \* none of these answers.
- \* the extent to which changes in sales revenues affect operating profits.
- \* the extent to which operating profits are affected by variable costs.

That answer is incorrect.

Correct answer:

the extent to which changes in sales revenues affect operating profits.

Operating leverage is the extent to which changes in sales revenues affect operating profits.

-----

A decrease in a firm's willingness to pay dividends is likely to result from an increase in its \_\_\_\_\_.

- \* collection of accounts receivable
- \* earnings stability
- \* access to capital markets
- \* stock price
- \* profitable investment opportunities

That answer is incorrect.

Correct answer:

profitable investment opportunities

Two points must be kept in mind when deciding how much cash should be distributed to stockholders:

1. The main objective is to maximize shareholder value.
2. The cash flows generated by the firm belong to its shareholders.

The optimal payout ratio is a function of 4 factors:

1. Investors' preferences for dividends versus capital gains.
2. The firm's investment opportunities.
3. The firm's target capital structure.
4. The availability and cost of external capital.

The last 3 steps are combined in the residual dividend model, which is a model in which the dividend paid is set equal to the actual earnings minus the amount of retained earnings necessary to finance the firm's optimal capital budget.

-----

A company currently sells 75,000 units annually. At this sales level, its EBIT is \$4 million, and its degree of total leverage is 2.0. The firm's debt consists of \$15 million in bonds with a 9.5 percent coupon. The company is considering a new production method which will entail an increase in fixed costs but a decrease in variable costs, and will result in a degree of operating leverage of 1.6. The president, who is concerned about the stand-alone risk of the firm, wants to keep the degree of total leverage at 2.0. If EBIT remains at \$4 million, what amount of bonds must be retired to accomplish this?

- \* \$9.19 million
- \* \$8.42 million
- \* \$6.58 million
- \* \$4.44 million
- \* \$7.63 million

That answer is incorrect.

Correct answer:

\$6.58 million

$$DTL = (DOL)(DFL)$$

$$2.0 = 1.6(DFL)$$

$$1.25 = DFL$$

$$1.25 = \$4,000,000 / (\$4,000,000 - I)$$

$\$5,000,000 - 1.25(I) = \$4,000,000$   
 $I = \$800,000.$   
 $\text{Debt} = \$800,000 / .095 = \$8,421,053.$   
 $\text{Must retire} = \$15,000,000 - \$8,421,053 = \$6.58 \text{ million of debt.}$

-----

A firm pays an annual preferred dividend of \$1.9 per share and investors expect a rate of return of 7.8% from this equity issue. The firm is in the 35% tax bracket. The preferred stock should be trading at:

- \* \$37.47
- \* \$42.19
- \* \$69.60
- \* \$24.35

That answer is incorrect.  
Correct answer:  
\$24.35

Preferred dividends are not tax-deductible. Hence, no tax adjustment is made while calculating the cost of preferred equity. The price of a perpetuity that pays C per year, at a discount rate of R, equals C/R. Hence,  $P = 1.9 / 0.078 = \$24.35.$

-----

Which of the following statements is correct?

- \* One problem with the CAPM approach to estimating the cost of equity capital is that if a firm's stockholders are, in fact, not well diversified, beta may be a poor measure of the firm's true investment risk.
- \* The cost of equity capital is generally easier to measure than the cost of debt, which varies daily with interest rates, or the cost of preferred stock which is issued infrequently.
- \* The cost of debt used to calculate the weighted average cost of capital is based on an average of the cost of debt already issued by the firm and the cost of new debt.
- \* The bond-yield-plus-risk-premium approach is the most sophisticated and objective method of estimating a firm's cost of equity capital.
- \* The cost of capital used to evaluate a project should be the cost of the specific type of financing used to fund that project.

That answer is correct!

If a firm's stockholders are not well diversified, they may be concerned with stand-alone risk rather than just market risk and the firm's true investment risk would not be measured by its beta, and the CAPM procedure would understate the correct value of the cost of equity capital.

-----

A major disadvantage of the payback period method is that it

- \* both of these answers are correct.
- \* none of these answers are correct.
- \* ignores the time value of money.
- \* ignores cash flows beyond the payback period.

That answer is correct!

A major drawback of both the payback and discounted payback methods is that they ignore cash flows that are paid or received after the payback period.

-----

The Price Company will produce 55,000 widgets next year. Variable costs will equal 40 percent of sales, while fixed costs will total \$110,000. At what price must each widget be sold for the company to achieve an EBIT of \$95,000?

- \* \$5.37
- \* \$5.00
- \* \$4.45
- \* \$2.00
- \* \$6.21

That answer is incorrect.

Correct answer:

\$6.21

EBIT = PQ - VQ - FC

$$\$95,000 = P(55,000) - (0.4)P(55,000) - \$110,000$$

$$\$205,000 = (0.6)(55,000)P$$

$$\$205,000 = 33,000P$$

$$P = \$6.21.$$

-----

The following cash flows are estimated for two mutually exclusive projects:

Time	Project A	Project B
0	-\$100,000	-\$110,000
1	60,000	20,000
2	40,000	40,000
3	20,000	40,000
4	10,000	50,000

When is Project B more lucrative than Project A? (That is, over what range of costs of capital (k) does Project B have a higher NPV than Project A?)

- \* For all values of k less than 6.57%.
- \* For all values of k greater than 6.57%.
- \* Project A is always more profitable than Project B.
- \* Project B is always more profitable than Project A.
- \* For all values of k less than 7.25%.

That answer is correct!

First, solve for the crossover rate. If you subtract the cash flows (CFs) of Project A from the CFs of Project B, then the differential CFs = \$100,000-\$110,000 = -\$10,000, \$60,000-\$40,000 = -\$40,000, \$40,000-\$40,000= 0, \$20,000-\$40,000 = \$20,000, and \$10,000-\$50,000 = \$40,000. Entering these CFs and solving for IRR/YR yields a crossover rate of 6.57%. Thus, if the cost of capital is 6.57%, then Projects A and B have the same NPV. If the cost of capital is less than 6.57%, then Project B has a higher NPV than Project A, since Project B's cash inflows come comparatively later in the project life. For lower discount rates, Project B's NPV is not penalized as much for having large cash inflows farther in the future than Project A.

-----

Rollins Corporation is constructing its MCC schedule. Its target capital structure is 20 percent debt, 20 percent preferred stock, and 60 percent common equity. Its bonds have a 12 percent coupon, paid semiannually, a current maturity of 20 years, and sell for \$1,000. The firm could sell, at par, \$100 preferred stock, which pays a 12 percent annual dividend, but flotation costs of 5 percent would be incurred. Rollins' beta is 1.2, the risk-free rate is 10 percent, and the market risk premium is 5 percent. Rollins is a constant growth firm, which just paid a dividend of \$2.00, sells for \$27.00 per share, and has a growth rate of 8 percent.

The firm's policy is to use a risk premium of 4 percentage points when using the bond-yield-plus-risk-premium method to find k(s) (component cost of retained earnings). The firm's net income is expected to be \$1 million, and its dividend payout ratio is 40 percent. Flotation costs on new common stock total 10 percent, and the firm's marginal tax rate is 40 percent.

What is the firm's cost of retained earnings using the DCF approach?

- \* 14.1%
- \* 16.9%
- \* 16.0%
- \* 16.6%
- \* 13.6%

That answer is incorrect.

Correct answer:

16.0%

Cost of retained earnings (DCF approach):

$k(s) = \$2.16 / \$27.00 + 8\% = 16.0\%$ .

-----

Which of the following conditions must be satisfied for a stable dividend policy to result from the Residual Dividend Policy?

- I. The earnings of a firm must be stable.
- II. Investor preference for dividends must be stable.
- III. The investment opportunities available to the firm must be stable.
- IV. There should be no signaling effects involved.

- \* III & IV
- \* I, III & IV
- \* I only
- \* I & III
- \* I & II
- \* III only
- \* II only

That answer is incorrect.

Correct answer:

I & III

Under the Residual Dividend Policy, a firm first determines the amount of capital it requires for sufficiently profitable projects. It then uses retained earnings to supply equity capital and raises debt in the proper amount to maintain the target capital structure. If any earnings are left over after this, they are paid out as dividends. If not, the firm will not only not pay any dividends but also issues new equity for financing. Thus, for this to lead to stable dividends, one must have stability in earnings and available investment opportunities. Note that for positive dividends, earnings must exceed capital requirements under the Residual Dividend Policy.

-----

Ace Consulting, a corporate finance consulting firm, is examining the operating performance and asset structure of Clay Industries. In their analysis, Ace has identified the following information for the most recent reporting period:

EBIT \$500,590  
 Sales \$988,000  
 Interest paid \$40,800

Given this information, what is the Degree of Financial Leverage for Clay Industries?

- \* 0.567
- \* 0.465
- \* 1.974
- \* None of these answers is correct.
- \* The Degree of Financial Leverage cannot be calculated from the information provided.
- \* 2.149

That answer is incorrect.

Correct answer:

None of these answers is correct.

To calculate the DFL, the financial analyst needs to determine the EBIT and interest paid for a predetermined time period. To calculate the Degree of Financial Leverage, the following equation is used:  $\{EBIT/[EBIT - \text{interest paid}]\}$ . Incorporating the given information into this equation yields the following:  $\{\$500,590/[\$500,590 - \$40,800]\} = 1.089$ . The annual sales figure is not necessary in the calculation of DFL. Additionally, remember that the DFL figure is always greater than one, therefore the first and fourth answers can be eliminated as possibilities by observation alone.

-----



As a general rule, the capital structure that

- \* Minimizes the required rate on equity also maximizes the stock price.
- \* Maximizes the price per share of common stock also minimizes the weighted average cost of capital.
- \* Maximizes expected EPS also maximize the price per share of common stock.
- \* None of these are correct.
- \* Minimizes the interest rate on debt also maximizes the expected EPS.

That answer is incorrect.

Correct answer:

Maximizes the price per share of common stock also minimizes the weighted average cost of capital.

The optimal capital structure is the one that maximizes the price of the firm's stock, and this generally calls for a debt ratio which is lower than the one that maximizes expected EPS.

-----

Which of the following statements is most correct?

- \* Companies can repurchase shares either (1) to change their capital structures or (2) to distribute cash to stockholders without paying cash dividends. In the second situation, tax considerations will probably play a key role in the decision to repurchase stock versus to pay more cash dividends.
- \* Stock dividends provide investors with additional shares of stock, not cash, yet many investors must pay cash in the form of taxes on the value of the stock dividends. For this reason, stock dividends are rarely used today.
- \* If the curve relating the WACC and the debt ratio looks like a sharp 'V', this would make it more feasible for a firm to follow the residual dividend policy than if the curve looks like a shallow bowl (or a shallow 'U').
- \* The bird-in-the-hand theory of dividend policy could be rejected immediately if personal income taxes were abolished.
- \* The open market type of dividend reinvestment plan is the best type for firms which need to bring in new equity capital.

That answer is correct!

Repurchasing shares will lower shares outstanding, thereby changing the capital structure. Cash dividends are taxable to the stockholder, which is a consideration.

-----

The Congress Company has identified two methods for producing playing cards. One method involves using a machine having a fixed cost of \$10,000 and variable costs of \$1.00 per deck of cards. The other method would use a less expensive machine (fixed cost = \$5,000), but it would require greater variable costs (\$1.50 per deck of cards). If the selling price per deck of cards will be the same under each method, at what level of output will the two methods produce the same net operating income?

- \* 15,000 decks
- \* 20,000 decks
- \* 25,000 decks
- \* 10,000 decks

\* 5,000 decks

That answer is incorrect.

Correct answer:

10,000 decks

Total cost(Method 1) =  $\$1.00(Q) + \$10,000$ .

Total cost(Method 2) =  $\$1.50(Q) + \$5,000$ .

Set equal and solve for Q:  $Q + \$10,000 = \$1.50(Q) + \$5,000$

$$\$5,000 = \$0.5(Q)$$

$$10,000 = Q.$$

-----

If the calculated NPV is negative, then which of the following must be true? The discount rate used is \_\_\_\_\_.

- \* equal to the internal rate of return
- \* too high
- \* greater than the internal rate of return
- \* too low
- \* less than the internal rate of return

That answer is incorrect.

Correct answer:

greater than the internal rate of return

If a project has a positive NPV, then it is generating more cash than is needed to service its debt and to provide the required return to shareholders, and this excess cash accrues solely to the firm stockholders. On the other hand is a project has a negative NPV, the required rate of return is not being met and the discount rate used must be greater.

-----

A financial analyst with Mally, Feasance & Company is examining shares of a large specialty retailer. Assume the following information:

EPS: \$2.30

ROE: 16.25%

Growth rate of dividends: 12.00%

Discount rate: 13.33%

Tax Rate 35%

Using this information, what is the dividend payout ratio for this specialty retailer? Further, what is the annual dividend?

- \* 73.85% \$1.70
- \* 23.07%, \$0.53
- \* 26.15%, \$0.60
- \* 26.15%, \$1.70

- \* 65.16%, \$1.50
- \* 73.85%, \$0.60

That answer is incorrect.

Correct answer:  
26.15%, \$0.60

To determine the dividend payout ratio, the equation used to determine the growth rate of dividends must be manipulated. This equation is originally structured as follows:

$$g = ROE (1 - \text{Dividend Payout Ratio})$$

In order to determine the Dividend Payout Ratio, the equation must be rearranged to the following:

$$(1 - \text{Dividend Payout Ratio}) = \text{Growth Rate of Dividends} / ROE$$

Imputing the given information into this equation will yield:

$$(1 - \text{Dividend Payout Ratio}) = 0.12 / 0.1625 = 0.73846$$

Finally, subtracting this figure from 1 will yield the answer of 26.15%. We must subtract the first answer from one because the first answer represents the retention rate, i.e. the percentage of earnings that is retained and reinvested at the firm's ROE. The retention rate and the payout ratio will always combine to equal positive one.

In order to determine the annual dividend, take the Dividend Payout Ratio, which was found to be 26.15%, and multiply this figure by the Earnings Per Share calculation, which is given as \$2.30. This will yield an annual dividend of \$0.60154.

As you can see, neither the discount rate nor the tax rate is factored into the equation.

-----

Clay Industries, a large industrial firm, is examining its capital structure. The firm is financed according to the following schedule based on market values:

- 50% debt
- 40% common stock
- 10% perpetual preferred stock

Additionally, consider the following information:

- Yield on outstanding debt: 8.50%
- Tax rate: 35%
- Annual preferred dividend: \$2.55
- Preferred stock price: \$25.97
- Return on equity: 16.75%
- Dividend payout ratio: 50%
- Cost of common stock: 14.25%

Using this information, what is the Weighted Average Cost of Capital for Clay Industries?

- \* 8.97%
- \* 9.37%

- \* 9.45%
- \* 9.25%
- \* 9.37%
- \* None of these answers

That answer is incorrect.

Correct answer:

9.45%

In order to calculate the WACC, it is necessary to first calculate the component after-tax cost of debt, common equity, and preferred equity. Once the cost of these components is determined, they are imputed into the WACC equation, which is as follows:

$$\{\text{WACC} = [(\% \text{ weight of debt securities} * \text{cost of debt}) + (\% \text{ weight of common stock} * \text{cost of common stock}) + (\% \text{ weight of preferred stock} * \text{cost of preferred stock})\}$$

To calculate the component cost of debt, use the following equation:

$$\{\text{After-tax cost of debt} = [\text{yield on outstanding debt securities} * (1 - \text{tax rate})\}$$

Factoring in the given information into this equation would yield the following:

$$\{\text{After-tax cost of debt} = [8.50\% * (1 - 0.35\%)]\} = 5.525\%$$

To calculate the component cost of outstanding preferred stock, the following equation must be used:

$$\{\text{Cost of preferred stock} = [\text{annual dividend} / \text{preferred stock price}]\}$$

$$\{\text{Cost of preferred stock} = [\$2.55 / \$25.97]\} = 9.82\%.$$

The final component of the WACC calculation, the cost of common equity, has been provided as 14.25%.

Now that the after-tax cost of debt, preferred stock, and common stock have been determined, the WACC calculation can be found. The calculation of the WACC is as follows:

$$\{[0.50 * 0.05525] + [0.40 * 0.1425] + [0.10 * 0.0982]\} = 9.445\%$$

-----

Effects of a project on cash flows in other parts of the firm is known as which of the following terms?

- \* Cannibalization
- \* Sunk Cost
- \* Incremental Cash Flow
- \* Opportunity Cost
- \* Externality

That answer is incorrect.

Correct answer:

Externality

Externalities are defined as effects of a project on cash flows in other parts of the firm

-----  
If a typical U.S. company uses the same discount rate to evaluate all projects, the firm will most likely become \_\_\_\_\_.

- \* riskier over time, and its value will decline
- \* riskier over time, and its value will rise
- \* less risky over time and its value will rise
- \* less risky over time and its value will decline
- \* there is no reason to expect its risk position or value to change over time as a result of its use of a single discount rate

That answer is correct!

The ramifications of the riskier projects discounted at the same rate as the average to less risky ones will become more significant as time goes on. The riskier projects that have not been properly discounted result in incorrect accept/reject decisions, thereby providing stockholders with lower than acceptable returns, which in turn lowers, the value of the firm.

-----  
Which of the following are factors in the optimal dividend payout ratio?

- I. Investor's preference for dividends versus capital gains
- II. The target capital structure
- III. The investment opportunities available to the firm
- IV. The cost and availability of external financing
- V. Beta Coefficient

- \* I, II, III
- \* I, III, IV, V
- \* II, III, IV
- \* None of these answers
- \* I, II, III, IV
- \* I, II, III, IV, V

That answer is incorrect.

Correct answer:

I, II, III, IV

The optimal payout ratio of a firm represents the ideal amount of earnings that should be distributed to shareholders as dividends. This figure is comprised of four components, namely: the cost and availability of external financing, the investment opportunities available to the firm, the firm's target capital structure, and investor preferences. The Beta coefficient is not expressly incorporated into the determination of the Optimal Dividend Payout Ratio.

-----  
Interest payments should be \_\_\_\_\_ the project cash inflows.

- \* added to
- \* subtracted from
- \* ignored while estimating
- \* subtracted from or ignored while estimating

That answer is incorrect.  
 Correct answer:  
 ignored while estimating

The effects of debt financing are taken into account through the discount rate used to discount the project cash flows. Hence, interest payments must be ignored while estimating a project's cash flows.

-----

Which of the following statements is most correct?

- \* All of these statements are true.
- \* As a firm's debt ratio approaches 100 percent, the after-tax cost of debt,  $k(d)(1 - T)$  (after-tax component cost of debt, where T is the firm's marginal tax rate), will be at its lowest level.
- \* All of these statements are false.
- \* An increase in the corporate tax rate would lower the weighted average cost of capital for an average firm, other things held constant.
- \* Depreciation-generated funds have a cost equal to the firm's lowest WACC (Weighted Average Cost of Capital), and hence they have no impact on the MCC (Marginal Cost of Capital) schedule.

That answer is incorrect.  
 Correct answer:

An increase in the corporate tax rate would lower the weighted average cost of capital for an average firm, other things held constant.

Increasing the corporate tax rate would lower the after-tax component cost of debt, thereby lowering the WACC, with all other things held constant.

-----

Which of the following methods for measuring "stand-alone" risk is characterized by the formulation of a "best case" and "worst case" scenario?

- \* Monte Carlo Simulation
- \* None of these answers
- \* Miller and Thorn Simulation
- \* Sensitivity Analysis
- \* Tributary Leads Analysis
- \* Probability Analysis

That answer is incorrect.  
 Correct answer:  
 None of these answers

The answer prompted in this question is "Scenario Analysis." Scenario Analysis is a method of measuring a project's stand-alone risk. This method is considered as superior to Sensitivity Analysis, and this is primarily because Scenario Analysis considers a range of possible values for the input values whereas Sensitivity Analysis considers only the sensitivity of the project's NPV to fluctuations in the underlying input variable(s). In Scenario Analysis, the financial analyst establishes a "worst case" and "best case" situation, in addition to the "base case." The base case scenario sets all the input variables at their most likely values. Often, the values used for the base case scenario are the current values for input variables or their expected values into the near future. In Scenario Analysis, the best and worst case scenarios are compared to the base case, and the sensitivity of the project's NPV is examined.

"Tributary Leads Analysis," along with "Miller and Thorn Simulation," are completely fictitious answers.

-----

Intelligent Semiconductor, a diversified technology company, is evaluating the sales of its cadmium silicon transistor coils, and has identified the following information:

Average sales price per unit is \$505.50  
Average variable cost is \$309.61  
Breakeven quantity of 4,084

Which of the following best describes the fixed production costs for this product?

- \* None of these answers is correct.
- \* 225,000 units
- \* 550,000 units
- \* 750,000 units
- \* The fixed production cost for this product cannot be determined from the information provided.
- \* 20.85 units

That answer is correct!

To calculate the breakeven quantity for a product, use the following equation:  $\{\text{Fixed operating costs}/[\text{avg. sales price per unit} - \text{variable cost per unit}]\}$ . To determine the total fixed production cost of this product, we must rearrange the standard equation using algebra, in a manner such that the resulting equation resembles the following:  $[\$505.50 - \$309.61] * 4,084 \text{ units} = X$ . Solving for X, which represents the total fixed production costs, yields an answer of 800,014 units.

-----

Assume a project has normal cash flows (i.e., the initial cash flow is negative, and all other cash flows are positive). Which of the following statements is most correct?

- \* All else equal, a project's IRR increases as the cost of capital declines.
- \* None of the answers are correct.
- \* All of the answers are correct.
- \* All else equal, a project's NPV increases as the cost of capital declines.
- \* All else equal, a project's MIRR is unaffected by changes in the cost of capital.

That answer is incorrect.

Correct answer:

All else equal, a project's NPV increases as the cost of capital declines.

Since the present value of each cash flow is discounted at the project's cost of capital, the NPV will increase as the cost of capital declines, and the NPV will decline as the cost of capital increases. This relationship is plotted on the net present value profile.

-----

For a typical firm with a given capital structure, which of the following is correct? (Note: All rates are after taxes.)

- \* None of these answers.
- \*  $k(e) > k(s) > WACC > k(d)$ .
- \*  $WACC > k(e) > k(s) > k(d)$ .
- \*  $k(d) > k(e) > k(s) > WACC$ .
- \*  $k(s) > k(e) > k(d) > WACC$ .

That answer is incorrect.

Correct answer:

$k(e) > k(s) > WACC > k(d)$ .

$k(d)$  = interest rate on the firm's new debt;  $k(e)$  = component cost of external equity, or equity obtained by issuing new common stock as opposed to retaining earnings;  $k(s)$  = component cost of retained earnings (or internal equity).

Typically, the cost of equity is higher than the cost of retained earnings because of flotation costs involved in issuing new common stock. The cost of debt is the lowest because it is the relevant cost of new debt, taking into account the tax deductibility of interest, and because of this deductibility of interest, it is the lowest component. The WACC is a weighted average of all the components, so it would be somewhere in the middle.

-----

The date on which the right to the current dividend no longer accompanies a stock is known as the:

- \* Payment Date
- \* Declaration Date
- \* Expiration Date
- \* Ex-Dividend Date
- \* Holder-of-Record Date

That answer is incorrect.

Correct answer:

Ex-Dividend Date

The Ex-Dividend date is the date on which the right to the current dividend no longer accompanies the stock. This date is usually four days prior to the holder-of-record date.

-----



A firm currently has 3 million dollars worth of 6% debt outstanding. It can currently borrow in the capital markets at the rate of 7.2%. The firm faces a 40% tax rate. Its marginal after-tax cost of debt is about:

- \* 7.2%
- \* 6%
- \* 3.6%
- \* 4.3%

That answer is incorrect.

Correct answer:

4.3%

Since debt interest is tax-deductible, the after-tax cost of debt equals  $7.2\% \times (1 - 40\%) = 4.32\%$ . Note that bonds issued in the past are of no relevance since it is the current cost of borrowing that is of concern.

-----

A company is considering an expansion project. The company's CFO plans to calculate the project's NPV by discounting the relevant cash flows (which include the initial up-front costs, the operating cash flows, and the terminal cash flows) at the company's cost of capital (WACC). Which of the following factors should the CFO include when estimating the relevant cash flows?

- \* All of the answers are correct.
- \* Any interest expenses associated with the project.
- \* None of the answers are correct.
- \* Any opportunity costs associated with the project.
- \* Any sunk costs associated with the project.

That answer is incorrect.

Correct answer:

Any opportunity costs associated with the project.

Sunk costs should be excluded from the analysis, and interest expense is incorporated in the WACC and not the cash flows.

-----

In the real world, dividends \_\_\_\_\_.

- \* are usually changed every year to reflect earnings changes
- \* fluctuate more widely than earnings
- \* tend to be a lower percentage of earnings for mature firms
- \* are usually set as a fixed percentage of earnings
- \* usually exhibit greater stability than earnings

That answer is incorrect.

Correct answer:

usually exhibit greater stability than earnings

Most firms and stockholders expect earnings to grow over time with dividends growing virtually the same as earnings. In the past, a "stable dividend policy" meant a company paid the same dollar dividend for several years in a row, but today it means increasing the dividend at a reasonably steady rate. From an investor's viewpoint, the most stable policy is that whose dividend growth rate is predictable. The second most stable policy is where stockholders can reasonably be sure that the current dividend will not be reduced. The least stable is where earnings and cash flows are so volatile that investors cannot count on the company to maintain the current dividend.

Since profits and cash flow vary over time for a firm, one would suggest that firms should vary their dividends over time, increasing them when cash flows are large and lowering them when cash is low relative to investment opportunities. However, many stockholders rely on dividends and reducing dividends may send incorrect signals, which could drive the stock price. Thus, maximizing a firm's stock price requires a balance of its internal fund requirements against the desires of the stockholders

-----

Which of the following statements is most correct?

- \* None of these answers are correct.
- \* All of these answers are correct.
- \* Opportunity costs should not be incorporated into capital budgeting decisions.
- \* Relevant externalities should be incorporated into capital budgeting decisions.
- \* Sunk costs should be incorporated into capital budgeting decisions.

That answer is incorrect.

Correct answer:

Relevant externalities should be incorporated into capital budgeting decisions.

Sunk costs should not be taken into consideration. Opportunity costs should be taken into consideration.

-----

Which of the following Companies has the highest degree of financial leverage?

Firm A

EBIT: \$1,500,000

Interest Paid: \$130,000

Total Operating Expenses: \$600,000

Fixed Operating Expenses: \$350,000

Firm B

EBIT: \$400,000

Interest Paid: \$55,000

Total Operating Expenses: \$1,300,000

Fixed Operating Expenses: \$1,000,000

Firm C

EBIT: \$500,000

Interest Paid: \$45,000

Total Operating Expenses: \$6,000,000

Fixed Operating Expenses: \$4,750,000

Firm D  
EBIT: \$995,000  
Interest Paid: \$105,000  
Total Operating Expenses: \$5,000,000  
Fixed Operating Expenses: \$3,000,000

Firm E  
EBIT: \$995,000  
Interest Paid: \$120,000  
Total Operating Expenses: \$5,900,000  
Fixed Operating Expenses: \$2,000,000

- \* Firm D
- \* Firm A
- \* Firm B
- \* Firm C
- \* Firm E

That answer is incorrect.  
Correct answer:  
Firm B

The Degree of Financial Leverage (DFL) measures the percentage change in EPS that results from a given percentage change in EBIT. Financial Leverage is the second component of total leverage, along with Operating Leverage. The equation used to calculate the Degree of Financial Leverage is as follows:  $\{DFL = [EBIT / (EBIT - Interest Paid)]\}$ .

In this example, Firm B has the highest DFL, with a figure of 1.15942. Remember that the Degree of Financial Leverage can never be less than one, and can never be negative. In a situation where the company under examination has zero interest expense, the DFL would be equal to one, i.e. the EBIT is equal to the EBIT minus the interest expense. Another important note to remember is that in calculating the Degree of Financial Leverage, dividend payments to preferred stockholders should be included in the interest expense figure. Operating expenses are not factored into the DFL calculation, rather are used in the determination of Operating Leverage.

-----  
A financial analyst with Smith, Kleen & Beetchnutty is examining shares of a publicly-traded specialty brewer. Assume the following information:

EPS: \$1.83  
ROE: 19.00%  
Growth rate of dividends: 10.85%  
Discount rate: 12.50%  
Tax Rate 35%

Using this information, what is the dividend payout ratio for this specialty brewer? Further, what is the annual dividend?

- \* 50.76%, \$0.93
- \* The answer cannot be determined from the information provided.
- \* 42.90%, \$0.79
- \* 38.13%, \$0.70
- \* 57.11%, \$1.05

\* 42.90%, \$1.05

That answer is incorrect.

Correct answer:

42.90%, \$0.79

To determine the dividend payout ratio, the equation used to determine the growth rate of dividends must be manipulated. This equation is originally structured as follows:

$$\{g = ROE (1 - \text{Dividend Payout Ratio})\}$$

In order to determine the Dividend Payout Ratio, the equation must be rearranged to the following:

$$\{(1 - \text{Dividend Payout Ratio}) = \text{Growth Rate of Dividends} / ROE\}.$$

Imputing the given information into this equation will yield:

$$\{(1 - \text{Dividend Payout Ratio}) = 0.1085/0.19\} = 0.57105$$

Finally, subtracting this answer from 1 will yield the answer of 42.90% for the dividend payout ratio. (Remember that the original answer, 0.57105, is the retention rate, not the dividend payout ratio).

In order to determine the annual dividend, take the Dividend Payout Ratio, which was found to be 42.90%, and multiply this figure by the Earnings Per Share calculation, which is given as \$1.83. This will yield an annual dividend of \$0.785

-----  
Which of the following methods of measuring a project's stand-alone risk is characterized by using a computer to analyze a project's NPV across a wide range of values for numerous input variables? (Hint: This style of analysis evolved from methods used to examine probabilities in casino gambling.)

- \* Sensitivity Analysis
- \* Monte Carlo Simulation
- \* Scenario Analysis
- \* Probability Analysis
- \* None of these answers

That answer is incorrect.

Correct answer:

Monte Carlo Simulation

When measuring stand-alone risk using Monte Carlo Simulation, the use of a computer and a rather complex software package is necessary. In Monte Carlo Simulation, the expected ranges of input variables are specified, and random numbers are incorporated into the analysis function, producing a NPV value across a wide range of possible situations. Monte Carlo Simulation is so named because the technique evolved largely from methods used to analyze probabilities in casino gambling.

Scenario analysis involves the establishment of a "best case" and "worst case" scenario, which is compared to a predetermined "base case." Sensitivity Analysis seeks to determine the sensitivity of a project's NPV to changes in specific input variables, and "Probability Analysis" can be conducted using simple statistical formulas. None of these three methods absolutely require the use of a computer or complex statistical software package.

-----  
Sanford & Son Inc. is thinking about expanding their business by opening another shop on property they purchased 10 years ago. Which of the following items should be included in the analysis of this endeavor?

- \* Both statements should be included in the analysis.
- \* Sanford & Son can lease the entire property to another company (that wants to grow flowers on the lot) for \$5,000 per year.
- \* The new shop is expected to affect the profitability of the existing shop since some current customers will transfer their business to the new shop. Sanford and Son estimate that profits at the existing shop will decrease by 10 percent.
- \* Neither of the statements should be included in the analysis.

That answer is correct!

The expected impact of the new store on the existing store should be considered. In addition, the opportunity to lease the land represents an opportunity cost of opening a new store on the land and should be considered.

-----  
A project requires an initial outlay of 650. It also needs capital spending of 700 at the end of year 1 and 900 at the end of year 2. It has no revenues for the first 2 years but receives 1,200 in year 3, 1,600 in year 4 and 2,300 in year 5. The project's payback period equals \_\_\_\_\_.

- \* 4.54 years
- \* 2.26 years
- \* 3.66 years
- \* 4.91 years

That answer is incorrect.  
Correct answer:  
3.66 years

The cash flows of the project starting at the end of year 1 are:

-700, -900, +1,200, +1,600, +2,300

The payback period is defined as the expected number of years that would be required to recover the original investment. In particular,

Payback period = Years before full recovery + (unrecovered cost at the start of payback year)/(net cash flow in the payback year)

The net account balance goes positive in the 4th year. At the beginning of the 4th year, the outstanding balance equals  $650+700+900-1,200 = \$1,050$ . Therefore, payback period =  $3 + 1,050/1,600 = 3.66$  years.

-----

Which of the following are substantive purposes for conducting post-audit procedures in capital budgeting situations? Choose the best answer.

- I. Improving forecasts
- II. Shifts in the Security Market Line
- III. Improving operations
- IV. Controlling management
- V. Adhering to Bond Covenants
- VII. Ensuring adherence to governmental guidelines for performance presentation

- \* I, III, IV
- \* I, II, III, IV, VII, VIII
- \* I, III, IV, VIII
- \* I, III
- \* II, IV, VIII
- \* I, V, VII, VIII

That answer is incorrect.

Correct answer:

I, III

An important aspect of the capital budgeting process is the post-audit, which involves comparing actual results with those forecasted and determining why any discrepancies exist. The post-audit process has two main purposes. First, the post-audit process is used to improve the forecasting capacity of the firm. Second, this process is used to improve the operations of the firm. "Shifts in the Security Market Line" has little to do with the post-audit process. Additionally, remember that aside from AIMR PPS and other suggested performance presentation guidelines, there are no real "guidelines for research and performance presentation." There are certainly no "governmental guidelines" for performance presentation; therefore, answer VII is incorrect.

-----

Which of the following is/are true?

- I. The IRR method assumes that future cash flows are reinvested at the project's cost of capital.
- II. The NPV method assumes that future cash flows are reinvested at the project's cost of capital.
- III. The MIRR method assumes that future cash flows are reinvested at the project's cost of capital.
- IV. MIRR and NPV methods always lead to the same decisions for projects of similar sizes.

- \* II, III & IV
- \* I only
- \* II & III
- \* II only
- \* I, II, III & IV
- \* III only
- \* II & IV
- \* IV only

That answer is correct!

The IRR method assumes that future cash flows are reinvested at the internal rate of return of the project, not the project's cost of capital. Statements (II), (III) and (IV) are true.

-----

Which of the following terms describes what happens when the introduction of a new product causes the sales of existing products to decrease?

- \* Opportunity Cost
- \* Sunk Cost
- \* Externality
- \* Incremental Cash Flow
- \* Cannibalization

That answer is incorrect.

Correct answer:

Cannibalization

When the introduction of a new product causes the sales of existing products to decrease, it is called cannibalization.

-----

Which of the following statements is most correct?

- \* If a company's stock price increases, this increases its cost of equity capital.
- \* The before-tax cost of preferred stock may be lower than the before-tax cost of debt, even though preferred stock is riskier than debt.
- \* None of these statements are correct.
- \* If the cost of equity capital is low enough, it may be cheaper to issue common stock than it is to finance projects with retained earnings.
- \* All of these statements are correct.

That answer is incorrect.

Correct answer:

The before-tax cost of preferred stock may be lower than the before-tax cost of debt, even though preferred stock is riskier than debt.

Corporations, which receive a 70 percent exclusion of dividend income from their taxable income, own most preferred stock. Consequently, the before-tax coupons on preferred stock may be lower than the before-tax coupons on debt, despite the fact that preferred stock is riskier than debt. All the other statements are false.

-----

Musgrave Corporation has fixed costs of \$46,000 and variable costs that are 30 percent of the current sales price of \$2.15. At a price of \$2.15, Musgrave sells 40,000 units. Musgrave can increase sales by 10,000 units by cutting its unit price from \$2.15 to \$1.95, but variable cost per unit won't change. Should it

cut its price?

- \* No, EBIT decreases by \$250.
- \* No, EBIT decreases by \$6,000.
- \* Yes, EBIT increases by \$8,050.
- \* Yes, EBIT increases by \$11,500.
- \* Yes, EBIT increases by \$5,050.

That answer is incorrect.

Correct answer:

Yes, EBIT increases by \$8,050.

Calculate EBIT(1) at 40,000 units using the current sales price:

$$\text{EBIT}(1) = S - VC - FC = 40,000(\$2.15) - 0.30(40,000)(\$2.15) - \$46,000 = \$86,000 - \$25,800 - \$46,000 = \$14,200.$$

Calculate EBIT(2) at 50,000 units using the lower price of \$1.95:

$$\text{EBIT}(2) = 50,000(\$1.95) - 0.30(50,000)(\$1.95) - \$46,000 = \$97,500 - \$29,250 - \$46,000 = \$22,250.$$

$$\text{The change in EBIT} = \$22,250 - \$14,200 = +\$8,050.$$

Yes, Musgrave should cut its price, EBIT increases by \$8,050.

-----

Consider the following information:

30 day T-Bill rate (Risk free rate) 8.0%  
Common stock Beta 1.2  
Expected rate of return for the market 12.0%  
Asset turnover ratio 3.4x

Calculate this firm's cost of retained earnings using the CAPM approach.

- \* 43.52%
- \* 12.8%
- \* 9.6%
- \* 8.0%
- \* 27.2%
- \* 12.0%

That answer is incorrect.

Correct answer:

12.8%

To calculate the cost of retained earnings for a firm using CAPM, one may use the following formula: Cost of retained earnings = risk free rate + [(expected rate of return on the market - risk free rate) x Beta]. In this case, the cost of retained earnings = 8.0% + [(12.0% - 8.0%) x 1.2] = 12.8%.

-----

Assume that a firm currently has EBIT of \$2,000,000, a degree of total leverage of 7.5, and a degree of



financial leverage of 1.875. If sales decline by 20 percent next year, then what will be the firm's expected EBIT in one year?

- \* \$1,600,000
- \* \$3,600,000
- \* \$1,350,000
- \* \$400,000
- \* \$2,400,000

That answer is incorrect.

Correct answer:

\$400,000

$$DOL = DTL/DFL = 7.5/1.875 = 4.0.$$

$$\text{Change EBIT} = (-0.20)(4.0)(\$2,000,000) = -\$1,600,000.$$

$$\text{EBIT} = \$2,000,000 - \$1,600,000 = \$400,000.$$

-----

Coats Corp. generates \$10,000,000 in sales. Its variable costs equal 85 percent of sales and its fixed costs are \$500,000. Therefore, the company's operating income (EBIT) equals \$1,000,000. The company estimates that if its sales were to increase 10 percent, its net income and EPS would increase 17.5 percent. What is the company's interest expense? (Assume that the change in sales would have no effect on the company's tax rate.)

- \* \$142,857
- \* \$100,000
- \* \$857,142
- \* \$105,874
- \* \$111,584

That answer is correct!

Recall that  $DTL = \% \text{ change in NI} / \% \text{ change in sales}$   
 $= 0.175 / 0.10 = 1.75.$

$$DTL = (S - VC) / (S - VC - FC - I)$$

$$1.75 = (\$10,000,000 - \$8,500,000) / (\$10,000,000 - \$8,500,000 - \$500,000 - I)$$

$$1.75 = \$1,500,000 / (\$1,000,000 - I)$$

$$\$1,500,000 = \$1,750,000 - 1.75I$$

$$I = \$142,857.14.$$

-----

The Bird-in-the-Hand theory implies that as the dividend pay-out ratio is increased, the stock price:

- \* remains unaffected.
- \* decreases.
- \* increases.
- \* increases or decreases.

That answer is incorrect.  
Correct answer:  
increases.

The Bird-in-the-Hand theory implies that as the dividend pay-out ratio is increased, the stock price increases.

-----

A fundamental analyst for Smith, Kleen, & Beetchnutty is examining the financial information of Ludicrous Bubble Semiconductor to determine whether it is an appropriate investment for a hedge fund. In his analysis, the fundamental analyst has identified the following financial information:

Sales \$5,900,000  
Total fixed cost \$2,300,000  
Total variable cost \$1,665,000  
Interest expense \$75,750  
EBIT \$1,885,000  
Amortization expense \$47,550

Given this information, what is the Degree of Total Leverage for Ludicrous Bubble Semiconductor?

- \* 2.338
- \* 3.544
- \* 2.311
- \* 2.278
- \* 2.565

That answer is incorrect.  
Correct answer:  
2.278

The Degree of Total Leverage (DTL) demonstrates how a given change in sales will impact a firm's EPS. The equation used for calculating the DTL is as follows:  $\frac{\text{Sales} - \text{variable costs}}{\text{Sales} - \text{variable costs} - \text{fixed costs} - \text{interest expense}}$ . Incorporating the given values for these components into the DTL equation yields the following:  $\frac{\text{Sales } \$5,900,000 - \text{variable costs } \$1,665,000}{\text{Sales } \$5,900,000 - \text{variable costs } \$1,665,000 - \text{fixed costs } \$2,300,000 - \text{interest expense } \$75,750} = 2.278$ .

"EBIT" and "amortization expense" are not explicitly incorporated into the DTL equation.

-----

Given the following choices, what is the optimal capital structure for Chip Co.? (Assume that the company's growth rate is 2 percent.)

Debt Ratio	Dividends Per Share (\$)	Equity Cost of
0%	5.50	11.5%
25	6.00	12.0
40	6.50	13.0

50	7.00	14.0
75	7.50	15.0

- \* 50% debt; 50% equity
- \* 40% debt; 60% equity
- \* 25% debt; 75% equity
- \* 75% debt; 25% equity
- \* 0% debt; 100% equity

That answer is incorrect.  
 Correct answer:  
 25% debt; 75% equity

First, calculate the stock price for each debt level using the dividend growth model,  $P_0 = D_1 / (k_s - g)$ .

Debt	Div/share	$k_s$	$P_0$
0%	\$5.50	11.5%	$\$5.50 / (0.115 - 0.02) = \$57.89$ .
25%	6.00	12%	$\$6.00 / (0.12 - 0.02) = \$60.00$ .
40%	6.50	13%	$\$6.50 / (0.13 - 0.02) = \$59.09$ .
50%	7.00	14%	$\$7.00 / (0.14 - 0.02) = \$58.33$ .
75%	7.50	15%	$\$7.50 / (0.15 - 0.02) = \$57.69$ .

Clearly, \$60.00 is the highest price, so 25% debt and 75% equity is the optimal capital structure.

-----

The date on which a company actually distributes a dividend is known as the:

- \* Ex-Dividend Date
- \* Holder-of-Record Date
- \* Declaration Date
- \* Expiration Date
- \* Payment Date

That answer is incorrect.  
 Correct answer:  
 Payment Date

The "Payment Date" is the date that a company actually mails the dividend checks.

-----

Phoenix Products Inc. requires a new machine to produce a part for a solar air conditioner. Two companies have submitted bids, and you have been assigned the task of choosing one of the machines. Cash flow analysis indicates the following:

Year	Machine A	Machine B
0	-\$1,000	-\$1,000
1	0	417
2	0	417
3	0	417

4            1,938            417

If the cost of capital for Phoenix Products is 5 percent, which of the following is the most valid statement?

- \* The IRR(A) > IRR(B), therefore accept Machine A.
- \* The NPV(A) < NPV(B), therefore accept Machine B.
- \* Take neither A nor B since the cost of capital is greater than the internal rate of return.
- \* The NPV(A) > NPV(B), therefore accept Machine A.
- \* The IRR(A) < IRR(B), therefore accept Machine B.

That answer is incorrect.

Correct answer:

The NPV(A) > NPV(B), therefore accept Machine A.

$$\begin{aligned}\text{NPV(A)} &= \$1,938(\text{PVIF}(5\%,4)) - \$1,000 \\ &= \$1,938(0.8227) - \$1,000 = \$1,594.39 - \$1,000 = \$594.39. \\ \text{NPV(B)} &= \$417(\text{PVIFA}(5\%,4)) - \$1,000 \\ &= \$417(3.5460) - \$1,000 = \$1,478.68 - \$1,000 = \$478.68.\end{aligned}$$

Therefore, accept Machine A since NPV(A) > NPV(B).

-----

A project with normal (or conventional) cash flows has a single IRR of 10%. If a project's hurdle rate is 8%, the project NPV:

- \* is positive.
- \* could be all of these answers.
- \* equals zero.
- \* is negative.

That answer is correct!

"Normal cash flows" implies that there is an up front cost when the project is set up but all cash flows after that are cash inflows. For normal cash flows, the NPV is positive for discount rates lower than the IRR and negative for discount rates higher than the IRR. Since the project's hurdle rate is less than the IRR, the project's NPV is positive. Note: if there are cash outflows after the project is put into operation, one can get multiple IRRs.

-----

A firm has fixed costs of \$13,000, variable costs of \$15 and sale price per unit of \$22. The firm has an interest expense of \$800. The degree of financial leverage of the firm at an output level of 2,000 units is:

- \* 4.2
- \* 2.3
- \* 4.0
- \* 5.0

That answer is incorrect.

Correct answer:

5.0

$DFL = EBIT / (EBIT - I)$ . Also,  $EBIT = Q(P - V) - FC$ . Therefore,  $EBIT = 2000 * (22 - 15) - 13,000 = 1,000$  and  $DFL = 1000 / (1000 - 800) = 5$ .

-----

Normal projects C and D are mutually exclusive. Project C has a higher net present value if the WACC is less than 12 percent, whereas Project D has a higher net present value if the WACC exceeds 12 percent. Which of the following statements is most correct?

- \* All of the statements are incorrect.
- \* Project D has a higher internal rate of return.
- \* All of the statements are correct.
- \* Project D is probably larger in scale than Project C.
- \* Project C probably has a faster payback.

That answer is incorrect.

Correct answer:

Project D has a higher internal rate of return.

From the information given, D has the higher IRR. The project's scale cannot be determined from the information given. As C's NPV declines more rapidly with an increase in rates, this implies that more of the cash flows are coming later on. So C would have a slower payback than D.

-----

The use of financial leverage by the firm has a potential impact on which of the following?

1. The risk associated with the firm.
2. The return experienced by the shareholder.
3. The variability of net income.
4. The degree of operating leverage.
5. The degree of financial leverage.

- \* 1, 3, 5
- \* 1, 2, 5
- \* 2, 3, 5
- \* 2, 3, 4, 5
- \* 1, 2, 3, 5

That answer is incorrect.

Correct answer:

1, 2, 3, 5

Since financial leverage is the extent to which fixed-income securities are used in a firm's capital structure all of these would impact except the degree of operating leverage, which is the percentage change in EBIT that results from a given percentage change in sales.

-----  
A company estimates that its weighted average cost of capital (WACC) is 10 percent. Which of the following independent projects should the company accept?

- \* Project C requires an up-front expenditure of \$1,000,000 and generates a positive internal rate of return of 9.7 percent.
- \* Project D has an internal rate of return of 9.5 percent.
- \* None of the projects should be accepted.
- \* Project B has a modified internal rate of return of 9.5 percent.
- \* Project A requires an up-front expenditure of \$1,000,000 and generates a net present value of \$3,200.

That answer is incorrect.

Correct answer:

Project A requires an up-front expenditure of \$1,000,000 and generates a net present value of \$3,200.

This is the only project with either a positive NPV or an IRR which exceeds the cost of capital.

-----

The following information applies to Lott Enterprises:

Operating Income (EBIT)	\$300,000
Debt	\$100,000
Interest Expense	\$10,000
Tax Rate	40%
Shares Outstanding	120,000
EPS	\$1.45
Stock Price	\$17.40

The company is considering a recapitalization where it would issue \$348,000 worth of new debt and use the proceeds to buyback \$348,000 worth of common stock. The buyback will be undertaken at the pre-recapitalization share price (\$17.40). The recapitalization is not expected to have an effect on operating income or the tax rate. After the recapitalization, the company's interest expense will be \$50,000.

Assume that the recapitalization has no effect on the company's price earnings ratio. What is the expected price of the company's stock following the recapitalization?

- \* \$15.30
- \* \$19.03
- \* \$20.48
- \* \$18.00
- \* \$17.75

That answer is incorrect.

Correct answer:

\$18.00

We can do this problem by using the P/E before and after the recap. Recall that  $P/E = \text{Price}/\text{EPS}$ .

	Before the recap	After recap
EBIT	\$300,000	\$300,000

Interest	-10,000	-50,000
EBT	\$290,000	\$250,000
Tax	116,000	100,000
NI	\$174,000	\$150,000
Shares	120,000	100,000*
EPS	\$174,000/120,000 = \$1.45	\$150,000/100,000 = \$1.50

P/E  $\$17.40/1.45 = 12x$   
 $*120,000 - (\$348,000/\$17.40)$

As P/E = 12 after the recapitalization (recall the question states that it does not change), we know  $12 = \text{Price}/\$1.50$   
 $\text{Price} = 12 \times \$1.50 = \$18.00$ .

-----

Projects A and B both have normal (conventional) cash flows. A's IRR is 7% and B's IRR is 8%. If projects A and B are mutually exclusive, you should select:

- \* Project B.
- \* Neither A nor B.
- \* Insufficient information.
- \* Project A.

That answer is incorrect.  
 Correct answer:  
 Insufficient information.

If you were to use the IRR rule, you would select project B if the project's cost of capital were greater than 8%. However, you should always use the NPV criterion for selecting projects. Even though B has a higher IRR, it could have a lower NPV at the project's cost of capital. Since this information is missing, you cannot say for sure whether project A is preferable or project B. Indeed, you don't even know if either of the projects has a positive NPV!

-----

Project A has an IRR of 10% and project B has an IRR of 12%. The crossover rate for these projects is 7.4%. You use the NPV rule for making project selections. If both the projects have a cost of capital of 6.9%, and are mutually exclusive with normal cash flows, you should:

- \* insufficient information.
- \* select project A.
- \* select neither A nor B.
- \* select project B.

That answer is incorrect.  
 Correct answer:  
 select project A.

The crossover rate is the discount rate at which the graphs of NPV versus discount rate for the two projects cross. Since the projects have normal cash flows, they will have a single crossover rate. Further,

the project with the higher IRR has a "flatter" NPV profile. Therefore, if the cost of capital is smaller than the crossover rate, the project with the flatter profile will have a smaller NPV. Therefore, project A has a higher NPV at the cost of capital of 6.9% and should be selected over project B.

-----

Genuine Products Inc. requires a new machine. Two companies have submitted bids, and you have been assigned the task of choosing one of the machines. Cash flow analysis indicates the following:

Year	Machine A	Machine B
0	-\$2,000	-\$2,000
1	0	832
2	0	832
3	0	832
4	3,877	832

What is the internal rate of return for each machine?

- \* IRR(A) = 16%; IRR(B) = 20%
- \* IRR(A) = 24%; IRR(B) = 20%
- \* IRR(A) = 18%; IRR(B) = 24%
- \* IRR(A) = 18%; IRR(B) = 16%
- \* IRR(A) = 24%; IRR(B) = 26%

That answer is incorrect.

Correct answer:

IRR(A) = 18%; IRR(B) = 24%

Solve for numerical PVIF and PVIFA then obtain corresponding interest rate from table

Machine A  $\$2,000 = \$3,877(PVIF(IrrA,4))$

$0.51586 = PVIFA(IrrA,4)$

IRR(A) = 18%.

Machine B  $\$2,000 = \$832(PVIFA(IrrB,4))$

$2.40385 = PVIFA(IrrB,4)$

IRR(B) = 24%.

-----

The Target (optimal) Capital Structure will be the mix of debt, preferred stock, and common equity that will accomplish which of the following items?

- \* Ensures that all debt and preferred dividend payments are met
- \* Maximize the firm's profits
- \* Provides funding for any project that a firm wishes to undertake
- \* Provide the lowest debt cost
- \* Maximize the firm's stock price
- \* Provide the smallest chance of bankruptcy

That answer is incorrect.

Correct answer:

Maximize the firm's stock price



The Target (Optimal) Capital Structure is defined as the percentages of debt, preferred stock, and common equity that will maximize the firm's stock price.

-----

Which of the following constitutes an example of a cost which is not incremental, and therefore not relevant in an accept/reject decision?

- \* A firm has a parcel of land that can be used for a new plant site or, alternatively, can be used to grow watermelons.
- \* All of these are examples of incremental cash flows, and therefore, relevant cash flows.
- \* A firm orders and receives a piece of new equipment, which is shipped across the country and requires \$25,000 in installation and set-up costs.
- \* A firm can produce a new cleaning product that will generate new sales, but some of the new sales will be from customers who switch from another product the company currently produces.
- \* All of these are not examples of incremental cash flows.

That answer is incorrect.

Correct answer:

All of these are examples of incremental cash flows, and therefore, relevant cash flows.

These are examples of opportunity costs, externalities or installation costs and are all incremental cash flows.

-----

Van Slyke Inc. has \$5,000,000 in assets, and currently has no debt--it is financed entirely with 200,000 shares of common stock, each of which trades at \$25 per share. The firm's EBIT is expected to be \$1,250,000 at year-end (i.e., at  $t=1$ ). The corporate tax rate is 40 percent. Van Slyke expects to pay out a dividend at year-end which is 50 percent of its net income. The company estimates that its earnings and dividends grow at a constant rate of 3 percent a year.

The company is considering a recapitalization where they would issue \$1,000,000 of debt at a before-tax cost of 10 percent. The proceeds from the debt issued would be used to repurchase shares of the company's stock at \$25 per share. The company's investment bankers estimate that the cost of equity capital would be 16 percent after the recapitalization. What would you expect the company's stock price to be immediately following the recapitalization? Assume that the dividend has not yet been paid.

- \* \$27.25
- \* \$33.17
- \* \$12.15
- \* \$16.59
- \* \$20.98

That answer is incorrect.

Correct answer:

\$16.59

Step 1 Find EPS:

EBIT	\$1,250,000
Interest expense	100,000 = 0.10(\$1,000,000)
Earnings before taxes	\$1,150,000
Taxes (40%)	460,000
Net income	\$690,000

Shares purchased = \$1,000,000/\$25 = 40,000.  
 Shares remaining = 200,000 - 40,000 = 160,000.  
 EPS = \$690,000/160,000 = \$4.3125.

Step 2 Find D1:

EPS(1)P/o = D1  
 \$4.3125(0.50) = \$2.1563.

Step 3 Find Po:

$ks = D1/Po + g$   
 $0.16 = \$2.1563/Po + 0.03$   
 $Po = \$16.59.$

-----

Which of the following is/are true?

- I. A project's sunk costs are irrelevant to the decision of accepting or rejecting it.
- II. A project's incremental cash flows are not affected by interest expenses.
- III. Project rankings using incremental net income and incremental net cash flows can be different.

- \* II only
- \* I & II
- \* II & III
- \* I, II & III
- \* I & III
- \* I only
- \* III only

That answer is incorrect.

Correct answer:

I, II & III

Incremental cash flows of a project are the cash flows that occur if and only if the project is undertaken. Since the effects of debt financing are taken into account through the discount rate used to discount the project cash flows, interest payments are ignored while estimating the project's cash flows. Therefore, a project's incremental cash flows are not affected by interest expense.

Sunk costs represent expenses that have already been incurred or committed to. Therefore, they should not be allowed to affect future decisions.

Finally, since income includes non-cash items, the discounting of income numbers can distort the project rankings based on cash flows. In capital budgeting, annual cash flows, not accounting income, are used to evaluate a project.

-----

Which of the following actions will enable a company to raise additional equity capital (that is, which of the following will raise the total book value of equity)?

- \* A stock repurchase.
- \* The establishment of a new-stock dividend reinvestment plan.
- \* A stock split.
- \* All of these answers are correct.
- \* The establishment of an open-market purchase dividend reinvestment plan.

That answer is incorrect.

Correct answer:

The establishment of a new-stock dividend reinvestment plan.

The new stock type of dividend reinvestment plan invests the dividends in newly issued stock, hence these plans raise new capital for the firm.

-----

Externalities:

- I. are spill-over effects of a project.
- II. are not necessarily harmful and can actually be beneficial.
- III. should be ignored in project evaluation, just as sunk costs are.

- \* I, II & III
- \* II & III
- \* I & II
- \* I & III
- \* I only
- \* III only
- \* II only

That answer is incorrect.

Correct answer:

I & II

You should remember three things about externalities:

1. They are spill-over effects from the project under consideration and affect the rest of the firm.
2. They are not necessarily harmful. Many of them can be beneficial ("positive externalities").
3. Unlike sunk costs, which have no future cash flow effects, externalities cannot be ignored in project evaluation since their effects on the cash flows are incremental cash flows themselves.

-----

Which of the following is a key benefit of using the degree of leverage concept in financial analysis?

- \* It shows how a given change in leverage will affect sales.

- \* None of these statements are correct.
- \* It establishes the optimal capital structure for the firm.
- \* It allows decision-makers a relatively clear assessment of the consequences of alternative actions.
- \* All of these statements are correct.

That answer is incorrect.

Correct answer:

It allows decision-makers a relatively clear assessment of the consequences of alternative actions.

The degree of leverage concept is useful primarily for the insights it provides regarding the joint effects of operating and financial leverage on EPS. DOL concepts provide alternatives to decision-makers, giving a better idea of the ramifications of alternative actions.

-----

Copybold Corporation is a start-up firm considering two alternative capital structures--one is conservative and the other aggressive. The conservative capital structure calls for a D/A ratio = 0.25, while the aggressive strategy call for D/A = 0.75. Once the firm selects its target capital structure it envisions two possible scenarios for its operations: Feast or Famine. The Feast scenario has a 60 percent probability of occurring and forecast EBIT in this state is \$60,000. The Famine state has a 40 percent chance of occurring and the EBIT is expected to be \$20,000. Further, if the firm selects the conservative capital structure its cost of debt will be 10 percent, while with the aggressive capital structure its debt cost will be 12 percent. The firm will have \$400,000 in total assets, it will face a 40 percent marginal tax rate, and the book value of equity per share under either scenario is \$10.00 per share.

What is the coefficient of variation of expected EPS under the conservative capital structure plan?

- \* 0.58
- \* 0.15
- \* 0.23
- \* 0.39
- \* 1.00

That answer is correct!

Calculate coefficient of variation

Expected EPS conservative:

$$E(\text{EPS}) = 0.6(\$1.00) + 0.4(\$0.20) = \$0.68.$$

Standard deviation

$$\begin{aligned} \text{SD}(\text{EPS-Conservative}) &= [0.6(\$1.00 - \$0.68)^2 + 0.4(\$0.20 - \$0.68)^2]^{1/2} \\ &= [0.0614 + 0.0922]^{1/2} = 0.3919. \end{aligned}$$

$$\text{CV}(\text{Conservative}) = 0.3919/0.68 = 0.576.$$

-----

Which of the following statements is most correct?

- \* An increase in the cost of equity capital when a company announces an increase in its dividend per share, would be consistent with the bird-in-the-hand theory.
- \* All of these statements are correct.
- \* The tax preference theory states that, all else equal, investors prefer stocks that pay low dividends because retained earnings can lead to capital gains that are taxed at a lower rate.
- \* A dividend policy that involves paying a consistent percentage of net income is the best policy if the "clienteles effect" is correct.
- \* An increase in the stock price when a company decreases its dividend is consistent with the signaling theory.

That answer is incorrect.

Correct answer:

The tax preference theory states that, all else equal, investors prefer stocks that pay low dividends because retained earnings can lead to capital gains that are taxed at a lower rate.

The reasons investors might prefer a low dividend payout to a high payout are:

1. Long-term capital gains are taxed at a maximum 28% rate, whereas dividend income is taxed at rates up to 39.6%. Obviously, high tax-bracket investors might prefer to have firms plow back earnings into the firm, presumably leading to a higher stock price, and resulting in a lower-taxed capital gain.
2. Capital gain taxes are not paid until the stock is sold and taxes paid in the future has a lower effective cost than taxes paid today.
3. If stock is held until one dies, no capital gains tax is due because the cost basis of the stock of the beneficiaries who inherit the stock, is the stock's value on the death day, thus escaping any capital gains tax.

-----

A firm is considering undertaking a project requiring \$7 million of new capital. The managers of the firm consider the prospects of the project having a 36% rate of return extremely likely, with a small probability that the project will not recover anything invested. The firm's current debt ratio is 70% and market analysts have estimated that the tax benefits from an increase in the debt level will be far smaller than the increase in bankruptcy costs. The Signaling Theory implies that the firm will try to raise \_\_\_\_\_ capital. The Trade-off Theory implies that the firm will try to raise \_\_\_\_\_ capital.

- \* equity; equity
- \* equity; debt
- \* debt; debt
- \* debt; equity

That answer is incorrect.

Correct answer:

debt; equity

Since additional debt does not create more benefits from tax shield than the losses anticipated due to increased bankruptcy costs, the Trade-off theory implies that the firm will try to raise equity capital for the project. On the other hand, since the prospects of the project are extremely favorable, Signaling Theory says that the firm would rather raise the capital through debt so that the profits from the project are shared on an equity basis only with the current shareholders.

-----  
Assume the following information for Bearstone Concrete and Manufacturing, Inc.

EPS: \$6.25  
ROE: 10.16%  
Growth rate of dividends: 5.25%  
Discount rate: 12.80%  
Tax Rate 35%  
Common shares outstanding 2,000,000

Using this information, what is the retention rate for this firm? Further, what is the annual dividend?

- \* 48.33%, \$3.02
- \* 51.67%, \$3.23
- \* 45.81%, \$2.86
- \* The answer cannot be determined from the information provided.
- \* 48.33%, \$3.23
- \* 51.67%, \$3.02

That answer is incorrect.  
Correct answer:  
51.67%, \$3.02

To determine the retention rate of dividends, the equation used to determine the growth rate of dividends must be manipulated. This equation is originally structured as follows:

$$\{g = ROE (1 - \text{Dividend Payout Ratio})\}$$

In order to determine the retention rate, the equation must be rearranged to the following:

$$\{(1 - \text{Dividend Payout Ratio}) = \text{Growth Rate of Dividends} / ROE\}.$$

Imputing the given information into this equation will yield as follows:

$$\{(1 - \text{Dividend Payout Ratio}) = 0.0525/0.1016\} = 0.51673.$$

Remember that the retention rate is equal to (1 - Dividend Payout Ratio). Therefore, no further calculation is necessary to determine the retention rate.

In order to determine the annual dividend, take the Dividend Payout Ratio, which is found by (1 - Retention Rate), and multiply this figure by the Earnings Per Share calculation, which is given as \$6.25. This will yield an annual dividend of \$3.02.

As you can see, neither the discount rate, tax rate, nor the number of common shares outstanding is factored into the equation.

-----  
Which of the following would not have an influence on the optimal dividend policy?

- \* The costs associated with selling new common stock.
- \* All of these statements can have an effect on dividend policy.

- \* Bond indenture constraints.
- \* A strong shareholders' preference for current income versus capital gains.
- \* The possibility of accelerating or delaying investment projects.

That answer is incorrect.

Correct answer:

All of these statements can have an effect on dividend policy.

The optimal payout ratio is a function of 4 factors:

1. Investors' preferences for dividends versus capital gains.
2. The firm's investment opportunities.
3. The firm's target capital structure.
4. The availability and cost of external capital.

-----

The management of Clay Industries have adhered to the following capital structure: 50% debt, 45% common equity, and 5% perpetual preferred equity. The following information applies to the firm:

Before-tax cost of debt = 9.5%  
 Combined state/federal tax rate = 35%  
 Expected return on the market = 14.5%  
 Annual risk-free rate of return = 6.25%  
 Historical Beta coefficient of Clay Industries Common Stock = 1.24  
 Expected annual preferred dividend = \$1.55  
 Preferred stock net offering price = \$24.50  
 Annual common dividend = \$0.80  
 Common stock price = \$30.90  
 Expected growth rate = 9.75%  
 Subjective risk premium = 3.3%

Given this information, and using the Discounted Cash Flow (DCF) approach, what is the Weighted Average Cost of Capital for Clay Industries?

- \* The WACC for Clay Industries cannot be calculated from the information.
- \* 8.96%
- \* 13.05%
- \* 12.34%
- \* 7.70%
- \* 9.97%

That answer is incorrect.

Correct answer:

8.96%

The calculation of the Weighted Average Cost of Capital is as follows:  $\{\text{fraction of debt} * [\text{yield to maturity on outstanding long-term debt}][1 - \text{combined state/federal income tax rate}]\} + \{\text{fraction of preferred stock} * [\text{annual dividend/net offering price}]\} + \{\text{fraction of common stock} * \text{cost of equity}\}$ . The cost of common equity can be calculated using three methods, the Capital Asset Pricing Model (CAPM), the Dividend-Yield-plus-Growth-Rate (or Discounted Cash Flow) approach, and the Bond-Yield-plus-Risk-Premium approach. In this example, you are asked to calculate the cost of common equity using the Discounted Cash Flow, or Dividend-Yield-plus-Growth-Rate approach. To calculate the cost of equity using this

approach, take the expected annual dividend on common equity (\$0.80) divided by the market price of common stock (\$30.90), and add the expected growth rate (9.75%) to this figure. Using this method, the cost of common equity is found to be 12.34%. The after-tax cost of debt can be found by multiplying the yield to maturity on the firm's outstanding long-term debt (9.5%) by (1-tax rate). Using this method, the after-tax cost of debt is found as 6.175%. The calculation of the cost of perpetual preferred stock is relatively straightforward, simply divide the annual preferred dividend by the net offering price. Using this method, the cost of preferred stock is found as 6.327%. Incorporating these figures into the WACC equation gives the answer of 8.957%.

-----

Project A has an IRR of 12% and project B has an IRR of 9%. The crossover rate for these projects is 6.9%. You use the NPV rule for making project selections. If both the projects have a cost of capital of 10.4% and the projects are independent with normal cash flows, you should:

- \* select neither A nor B.
- \* select project B.
- \* insufficient information.
- \* select project A.

That answer is incorrect.  
Correct answer:  
select project A.

Note that the crossover rate is unimportant here since the projects are independent, not mutually exclusive. Hence, you should select all projects with positive NPV. In this case, since A has an IRR greater than the cost of capital and it has normal cash flows, it has a positive NPV. Project B's IRR exceeds the cost of capital and hence has negative NPV. Therefore, you should select A and reject B.

-----

Consider the following information for Company XYZ:

30 day T-Bill rate (Risk free rate) 5.2%  
Common Stock Beta 1.1  
Expected Rate of return for the market 12.0%  
Debt Credit Rating BBB

Calculate this firm's cost of retained earnings using the CAPM approach.

- \* 5.72%
- \* 17.2%
- \* 10.2%
- \* 12.0%
- \* 12.68%
- \* 5.2%

That answer is incorrect.  
Correct answer:  
12.68%



To calculate the cost of retained earnings for a firm using CAPM, one may use the following formula: Cost of retained earnings = risk free rate + ((expected rate of return on the market - risk free rate) x Beta). In this case the cost of retained earnings = 5.2% + ((12.0% - 5.2%) x 1.1 = 12.68%.

-----

Capitol City Transfer Company is considering building a new terminal in Salt Lake City. If the company goes ahead with the project, it must spend \$1 million immediately (at t = 0) and another \$1 million at the end of Year 1 (t = 1). It will then receive net cash flows of \$0.5 million at the end of Years 2 - 5, and it expects to sell the property and net \$1 million at the end of Year 6. All cash inflows and outflows are after taxes. The company's cost of capital is 12 percent, and it uses the modified IRR criterion for capital budgeting decisions. What is the project's modified IRR?

- \* 11.5%
- \* 11.9%
- \* 11.4%
- \* 12.0%
- \* 11.7%

That answer is incorrect.  
 Correct answer:  
 11.7%

Time line: (In millions)

k = 12%  
 MIRR = ?

0	1	2	3	4	5	6 Yrs
-1	-1	.5	.5	.5	.5	1.0

Tabular/Numerical solution:

$$PV(\text{Outflows}) = -\$1,000,000 - (\$1,000,000/1.12) = \$1,892,857.$$

$$TV(\text{Inflows}) = \$500,000(FVIFA(12\%,4))(FVIF(12\%,1)) + \$1,000,000 \\ = \$500,000(4.7793)(1.12) + \$1,000,000 = \$3,676.408.$$

$$\$1,892,857 = \$3,676,408/(PVIF(MIRR,6))^0$$

$$PVIF(MIRR,6) = 1.94225 \text{ (Take 6th root of both sides)}$$

$$1 + MIRR = 1.11699$$

$$MIRR = 11.699\%.$$

-----

According to the "Tax Preference Theory," which factor(s) would lead investors to desire a lower payout of dividends over a relatively higher payout of dividends?

- I. Capital gains may be taxed at a lower marginal rate than ordinary income

- II. The cost of retained earning equity capital is usually lower than debt capital
- III. Capital gains are not taxed until the stock is sold and the gain is realized
- IV. If the stock is held until the owner dies, the beneficiary may use the stock price at the time of inheritance as the basis, thus any capital gains up until that point are not taxed
- V. Investors prefer a stable dividend policy

- \* None of these answers
- \* I only
- \* I, III and IV
- \* I, II, III, IV & V
- \* II and III

That answer is incorrect.

Correct answer:

I, III and IV

The "Tax Preference Theory" states that there may be three reasons that investors would prefer lower dividend payments along with higher capital gains as opposed to high dividend payments. Long term capital gains may be taxed at a lower marginal rate than ordinary income (dividends). Also, investors have more control over when the taxable event occurs with capital gains. They are not taxed until the stock is sold and the gain is realized. Finally, if the stock is held until death, the beneficiary may claim the value at that time as the basis, thus avoiding taxes on any gains that previously accrued.

-----

Smith Company has no retained earnings. The company uses the CAPM to calculate the cost of equity capital. The company's capital structure consists of common stock, preferred stock, and debt.

Which of the following events will reduce the company's WACC?

- \* An increase in the flotation costs associated with issuing preferred stock.
- \* An increase in the flotation costs associated with issuing common equity.
- \* A reduction in the market risk premium.
- \* An increase in the company's beta.
- \* An increase in expected inflation.

That answer is incorrect.

Correct answer:

A reduction in the market risk premium.

If the risk premium decreases, the required return on common equity will be reduced. All of the other answers will increase the firm's WACC.

-----

Which of the following statements is most correct?

- \* For NPV versus IRR ranking conflicts to occur, the projects under consideration must have NPV profiles

which cross one another. Crossing profiles can occur only if the two projects differ in the size of the required investment outlay.

\* Large costs occur at the end of nuclear power plants' lives because these plants have to be closed down, and shutdown costs are high due to the difficulty of handling radioactive materials. For this reason, it is possible that a nuclear plant project could have two IRRs.

\* If the Federal Reserve Board lowered interest rates, this would, other things held constant, tend to favor short-term as opposed to long-term projects.

\* All of these statements are false.

That answer is incorrect.

Correct answer:

Large costs occur at the end of nuclear power plants' lives because these plants have to be closed down, and shutdown costs are high due to the difficulty of handling radioactive materials. For this reason, it is possible that a nuclear plant project could have two IRRs.

A project has nonnormal cash flows when sometime during or at the end of its life, a project calls for a large cash outflow. Projects with nonnormal cash flows can possess the existence of multiple IRRs.

-----

A sudden and unexpected decrease in the tax rate would be expected to have the most significant impact on the carrying cost of which of the following components of a firm's capital structure?

- \* Retained earnings
- \* Common stock
- \* None of these answers
- \* Preferred stock
- \* Debt

That answer is incorrect.

Correct answer:

Debt

After a sudden and unexpected decrease in the tax rate, corporations will find themselves in an environment where the tax-shelter benefits of debt financing have become compromised. Currently, firms can deduct coupon payments on their debt securities from their annual income, and this tax-deductibility feature is an important consideration in any capital budgeting decision. A decrease in the tax rate will increase the cost of debt, and therefore will decrease the attractiveness of debt securities as an alternative to other methods of financing.

-----

Your firm's EPS last year was \$1.00. You expect sales to increase by 15 percent during the coming year. If your firm has a degree of operating leverage equal to 1.25 and a degree of financial leverage equal to 3.50, then what is its expected EPS?

- \* \$1.6563
- \* \$2.5843
- \* \$2.2427
- \* \$1.3481
- \* \$1.9813

That answer is correct!

EPS(0) = \$1.00. DOL = 1.25. EPS(1) = ?

%Change S = 15%. DFL = 3.50.

DTL = DOL(DFL) = 1.25(3.50) = 4.375.

EPS(1) = EPS(0)[1.0 + (DTL)(%Change Sales)] = \$1.00[1.0 + (4.375)(0.15)]  
= \$1.00[1.6563] = \$1.6563.

-----

Which of the following correctly describes the equation used to calculate the growth rate of dividends for a dividend-paying stock? Choose the best answer

\*  $g = ROE(1 - \text{Dividend Payout Ratio})$

\*  $g = ROE[(1 - \text{Dividend Payout Ratio})(1 - \text{combined state/federal tax rate})]$

\*  $g = ROA(1 - \text{Dividend Payout Ratio})$

\*  $g = \{[\text{Annual Dividend}/1 + \text{Discount Rate}][1 - \text{Dividend Payout Ratio}] * ROE\}$

\*  $g = ROE(\text{Dividend Payout Ratio} - \text{Retention Rate})$

That answer is correct!

The dividend growth rate of a dividend-paying company can be calculated using this equation:

$\{g = ROE(1 - \text{Dividend Payout Ratio})\}$ .

This equation could similarly be illustrated by the following:

$\{g = ROE(\text{Retention Rate})\}$

Remember that the Retention Rate is the amount of earnings that are retained within the firm, i.e. net income that is reinvested and not distributed to shareholders. The return that is earned on these "retained funds" is the Return on Equity. By multiplying the percentage of earnings that are reinvested by the return to be earned on these funds, one will arrive at the growth rate of dividends.

-----

Gulf Electric Company (GEC) uses only debt and equity in its capital structure. It can borrow unlimited amounts at an interest rate of 10 percent so long as it finances at its target capital structure, which calls for 55 percent debt and 45 percent common equity. Its last dividend was \$2.20; its expected constant growth rate is 6 percent; its stock sells on the NYSE at a price of \$35; and new stock would net the company \$30 per share after flotation costs. GEC's tax rate is 40 percent, and it expects to have \$100 million of retained earnings this year.

GEC has two projects available: Project A has a cost of \$200 million and a rate of return of 13 percent, while Project B has a cost of \$125 million and a rate of return of 10 percent. All of the company's potential projects are equally risky.

Assume now that GEC needs to raise \$300 million in new capital. What is GEC's marginal cost of capital for evaluating the \$300 million in capital projects and any others that might arise during the year?

- \* 12.66%
- \* 6.00%
- \* 9.50%
- \* 13.77%
- \* 9.00%

That answer is incorrect.

Correct answer:

9.50%

$k(d)$  (interest rate on the firm's new debt) = 10%;

$k(d)(1 - T)$  (after-tax component cost of debt) =  $10\%(0.6) = 6\%$ .

$D/A = 55\%$

$D(0) = \$2.20$

$g = 6\%$

$P(0) = \$35$

$P(N) = \$35$

$T$  (The firm's marginal tax rate) = 40%

Retained earnings = \$100M;  $BP(RE) = \$100M / .45 = \$222.22M$

$k(s)$  (component cost of retained earnings) =  $\$2.33/\$35 + 6\% = 12.66\%$

$k(e)$  (component cost of external equity) =  $\$2.33/\$30 + 6\% = 13.77\%$ .

WACC (Weighted Average Cost of Capital) (1) =  $0.55(6\%) + 0.45(12.66\%) = 9.0\%$

WACC(2) =  $0.55(6\%) + 0.45(13.77\%) = 9.5\%$

-----

Firms which anticipate a higher need for expansion capital in the future tend to have \_\_\_\_\_ debt ratio, all else equal.

- \* a low
- \* a high
- \* the question is based on a false premise. Tax deductions for interest expenses imply that the optimal debt ratio is 100%.
- \* a high or low

That answer is correct!

The greater the future capital need, the stronger the balance sheet has to be and hence, the lower the debt that is carried on the books.

-----  
Assume that all the assumptions of Modigliani and Miller hold. In particular, there are no taxes and transaction costs. A firm has a policy of paying out 8% of the stock price as dividends. However, an investor would like to receive only a 4% dividend. For this, he should:

- \* none of these answers.
- \* liquidate 8% of his stock holding after receiving the dividend.
- \* liquidate 4% of his stock holding after receiving the dividend.
- \* use half of the dividend amount to buy stock after receiving the dividend.

That answer is incorrect.

Correct answer:

use half of the dividend amount to buy stock after receiving the dividend.

Suppose the investor is holding stocks worth \$100. The company then pays \$8 as dividends. To reduce his dividend income to \$4, the investor must buy stocks worth \$4.

-----  
Which of the following equations correctly illustrates the calculation of the cost of perpetual preferred equity?

- \* None of these examples
- \*  $\text{Net offering price}/(\text{required rate of return}) + \text{expected growth}$
- \*  $\text{Offering price}/(\text{expected rate of return} - \text{required rate of return}) + \text{expected growth}$
- \*  $\text{Annual dividend}/(\text{offering price} + \text{flotation costs})$
- \*  $(\text{Annual dividend}/\text{current preferred stock price}) + \text{expected growth rate}$
- \*  $\text{Annual dividend}/(\text{offering price} - \text{flotation costs})$

That answer is incorrect.

Correct answer:

$\text{Annual dividend}/(\text{offering price} - \text{flotation costs})$

The cost of perpetual preferred equity can be found by dividing the annual dividend by the net offering price, or gross offering price less flotation costs. Of the six answers listed, only #2 represents a recognized financial equation; the rest are largely fictitious.

-----  
Which of the following choices correctly describes an investment in which the cash flows from an existing project must be considered along with the expected cash flows of a proposed project?

- \* Expansion project
- \* Retrenchment project
- \* Replacement project
- \* Non-normal project
- \* Marginal project

That answer is incorrect.

Correct answer:

Replacement project

In an analysis of a replacement project, the cash flows associated with the existing project must be examined along with the expected cash flows from a new project. Expansion project is defined as one for which the firm in question does not have an existing proxy, or a project which will expand the operations of the Company into a new market or functional niche. Expansion projects are for the expansion of revenues. "Marginal project" and "retrenchment project," are fictitious terms.

-----

A firm's value will be maximized by setting a high dividend payout because investors are less certain of receiving capital gains than they are of receiving dividends payments. This statement describes which of the following dividend policy theories?

- \* Gordon and Lintner Bird-In-The-Hand Theory
- \* Black and Scholes Dividend Model
- \* Miller and Modigliani Dividend Irrelevance Theory
- \* The Tax Preference Theory
- \* The Tax Avoidance Theory

That answer is correct!

Gordon and Lintner contend that investors prefer high dividends because they are less certain of receiving capital gains than they are of receiving dividends. Thus, investors value a dollar of expected dividend payout more highly than an expected dollar of capital gain.

-----

Which of the following statements is most correct?

- \* The clientele effect suggests that investors choose their investments based on firms' past dividend policies and changes to established dividend policies may be costly to investors.
- \* All of these statements are correct.
- \* Dividends paid under a residual dividend policy will send consistent signals to investors.
- \* If you were testing dividend theories and found that a dividend increase resulted in higher stock prices, then you could rule out all other theories and conclude that the bird-in-the-hand theory was most consistent with the evidence you found.
- \* None of these statements are correct.

That answer is correct!

Different groups, or clientele, of stockholders prefer different dividend payout policies. Stockholders in a low or tax-free tax bracket generally prefer cash income, so a payout would be their preference. On the other hand, stockholders in a high tax bracket might prefer reinvestment of earnings because they have little need for current investment income.

To the extent that stockholders can switch firms, a firm can change from one dividend payout policy to another to let stockholder who do not like the new policy sell to other investors who do. Yet this would be costly because of brokerage costs, the capital gains taxes that would have to be paid by the selling

stockholders, and the chance that there will be a net loss of investors who like the firm's new dividend policy. Management should therefore, probably not change its policy. Several studies show that there is a clientele effect, which is the tendency of a firm to attract a set of investors who like its dividend policy. The existence of the clientele effect does not necessarily imply that one dividend policy is better than another.

-----  
Consider the following information:

Borrowing Rate 10%  
Marginal Tax Rate 40%  
Preferred Stock Par Price \$100  
Preferred Dividend \$10  
Preferred Stock floatation cost 2.5%  
Cost of common equity 12.0%  
Preferred Stock issued at Par  
The Optimal Capital Structure is 45% debt, 50% common equity, and 5% preferred stock.  
Credit Rating BB+

What is the firm's Weighted Average Cost of Capital (WACC)?

- \* 7.21%
- \* 9.21%
- \* 9.0%
- \* 8.0%
- \* 2.5%
- \* 28.00%

That answer is incorrect.

Correct answer:

9.21%

The firm's Weighted Average Cost of Capital (WACC) is a weighted average of the component cost of capital. In this case  $10\%(\text{borrowing rate}) \times (1-.4)\text{Tax savings} = 6\%$  is the component cost of debt.  $\$10(\text{preferred dividend}) / 97.5(\text{Par minus floatation cost}) = 10.25\%$  is the component cost of preferred stock. Thus the  $\text{WACC} = .45(6\%) + .5(12\%) + .05(10.25\%) = 9.21\%$

-----  
Intelligent Semiconductor is considering the development of a new data storage medium, which will allow tremendous increases in the efficiency of its customer's high-end server lines. The development of the new system will take place in the firm's existing facilities, and the storage costs for the additional equipment are expected to be residual in nature. The following information applies to this project:

Rent expense for existing facilities (\$2,500)

Initial cash outlay (\$30,000)

t1: \$11,000

t2: \$15,000

t3: \$15,000



t4: \$15,000  
t5 \$5,000

Discount rate: 7.75%

Assuming no taxes or related charges, that the initial cash outlay does not include any sunk costs, and a \$0.00 salvage value at after the fifth year, which of the following choices best represents the discounted payback period for this investment?

- \* 2.57 years
- \* 2.77 years
- \* 3.87 years
- \* 3.75 years
- \* 2.90 years

That answer is correct!

Remember that the rental expense of the firm's existing facilities is a sunk cost, and should not be incorporated into the calculation. This is due to the fact that the rental expense is not incremental in nature, and is unaffected by the acceptance of the project in question. In this example, the discounted payback period is found by discounting the cash inflows at an annual rate of 7.75%. After the first period, the remaining balance to be recovered is found as  $\{(\$30,000) + [\$11,000/1.0775]\} = (\$19,791.18)$ . After the second period, the remaining balance to be recovered is found by the following:  $\{(\$19,791.18) + [\$15,000/1.16101]\} = (\$6,871.36)$ . The third period has a discounted cash inflow of \$11,990.56, which is greater than the (\$6,871.36) debit to be recouped. By dividing the amount needed to recoup the investment (\$6,871.36), by the cash inflow from period 3, \$11,990.56, we find a time period of 0.57 years. This figure is added to the two prior period's, yielding a Discounted Payback Period of 2.57 years.

-----

Firm A has a higher operating leverage than firm B. All else equal, firm A has a \_\_\_\_\_ business risk and a \_\_\_\_\_ variability of ROE.

- \* lower, higher
- \* higher, lower
- \* higher, higher
- \* lower, lower

That answer is incorrect.

Correct answer:  
higher, higher

"Operating leverage" refers to the extent to which changes in sales revenues affect operating profits. The greater the leverage, the higher the business risk and the variability of ROE.

-----

Strategic Systems Inc. expects to have net income of \$800,000 during the next year. Its target, and current, capital structure is 40 percent debt and 60 percent common equity. The Director of Capital Budgeting has determined that the optimal capital budget for next year is \$1.2 million. If Strategic uses the residual dividend model to determine next year's dividend payout, what is the expected dividend payout

ratio?

- \* 0%
- \* 56%
- \* 28%
- \* 42%
- \* 10%

That answer is incorrect.

Correct answer:

10%

Equity requirement =  $0.6(\$1,200,000) = \$720,000$ .

Expected NI	\$800,000
Equity requirement	720,000
Available for dividends	\$80,000

Payout ratio =  $\$80,000/\$800,000 = 0.10 = 10\%$ .

-----

If a company uses the same discount rate for evaluating all projects, which of the following results is likely?

- \* Accepting no projects.
- \* Accepting poor, high-risk projects.
- \* Accepting only poor, high-risk projects.
- \* Accepting only good, low risk projects.
- \* Accepting all projects.

That answer is incorrect.

Correct answer:

Accepting poor, high-risk projects.

Under the risk-adjusted discount rate, differential project risk is dealt with by changing the discount rate. High-risk projects are discounted at a higher cost of capital; lower-risk projects are discounted at a rate below the firm's average cost of capital, etc. This approach incorporates project risk into capital budgeting.

-----

In the absence of bankruptcy and agency costs and signaling actions, tax deductibility of interest payments implies that the optimal debt ratio should be:

- \* none of these answers
- \* 50%
- \* 100%
- \* zero

That answer is incorrect.

Correct answer:  
100%

If there are no costs to increased debt, such as bankruptcy costs, and no signaling effects in a firm's decisions about the capital structure, then a firm would try to maximize the benefits of the debt shield i.e. the deductibility of interest payments. This implies a debt ratio of 100%.

-----

Which of the following methods of estimating the cost of common equity for a firm treats risk explicitly?

- \* Composite method.
- \* Bond-yield-plus-risk-premium method.
- \* CAPM and Bond-yield-plus-risk-premium methods.
- \* DCF (Discounted Cash Flow) method and CAPM (Capital Asset Pricing Model) methods.
- \* CAPM method.

That answer is incorrect.

Correct answer:  
CAPM and Bond-yield-plus-risk-premium methods.

In the CAPM approach, the stock's beta coefficient must be estimated, which is used as an index of the stock's risk.

In the bond-yield-plus-risk-premium method the risk premium is judgmentally added to the interest rate on the firm's own long-term debt.

-----

The Residual Dividend Policy leads to:

- \* the firm paying out a constant fraction of earnings as dividends.
- \* the firm maintaining a constant absolute amount of dividends.
- \* the firm maintaining a steady growth of dividends.
- \* a highly unstable dividend policy.

That answer is incorrect.

Correct answer:  
a highly unstable dividend policy.

Under the Residual Dividend Policy, a firm first determines the amount of capital it requires for sufficiently profitable projects. It then uses retained earnings to supply equity capital and raises debt in the proper amount to maintain the target capital structure. If any earnings are left over after this, they are paid out as dividends. If not, the firm will not only not pay any dividends but also issues new equity for financing. Thus, the amount of dividends paid out can swing wildly from one year to the next, based on the current business conditions and future growth prospects.

-----

Business risk is concerned with the operations of the firm. Which of the following is not associated with (or not a part of) business risk?

- \* The ability to change prices as costs change.
- \* Changes in required returns due to financing decisions.
- \* The extent to which operating costs are fixed.
- \* Demand variability.
- \* Sales price variability.

That answer is incorrect.

Correct answer:

Changes in required returns due to financing decisions.

Business risk depends on: (1) unit sales variability, (2) sales price variability, (3) input price variability, (4) ability to adjust output prices for changes in input prices and, (5) the extent to which costs are fixed (operating leverage).

-----

Holding all else equal, an decrease in which of the following will cause an increase in the theoretical growth rate of common stock dividends according to the Growth Rate of Dividends Model?

- I. ROE
- II. Payout ratio
- III. Tax rate
- IV. Preferred stock price
- V. Discount rate
- VI. Retention rate

- \* II, V
- \* None of these answers
- \* II, IV
- \* III, II
- \* I, III, IV
- \* V, VI

That answer is incorrect.

Correct answer:

None of these answers

The equation used to determine the theoretical growth rate of common stock dividends is as follows:

{Annual growth rate = [ROE \* (1 - dividend payout ratio)]}

As you can see, of the choices listed, only a decrease in the dividend payout ratio will cause an increase in the theoretical growth rate of common stock dividends.

-----

Ecodevelopment Company has two mutually exclusive construction projects to evaluate. Each type of project can be duplicated repeatedly in different geographic locations around the country, but each

requires a very different set of assets to construct. Thus, Ecodevelopment uses the equivalent annual annuity method to evaluate such projects. Project type A costs \$6 million initially and generates expected end-of-year cash flows of \$3 million, \$5 million, and then \$10 million when it is sold after 3 years. Project type B costs \$9 million initially and has projected end-of-year cash flows of \$3, \$3, \$6, and \$6 million in Year 1 through Year 4, and then \$10 million in Year 5. The project types are equally risky and the firm's cost of capital is 12 percent. What is the EAA of the higher valued project type?

- \* \$2.726 million
- \* \$4.389 million
- \* \$3.240 million
- \* \$6.000 million
- \* \$5.600 million

That answer is incorrect.

Correct answer:

\$3.240 million

Calculate each project's original life NPV:

$$\begin{aligned} \text{NPV(A)} &= \$3.0(\text{PVIF}(12\%,1)) + \$5.0(\text{PVIF}(12\%,2)) + \$10.0(\text{PVIF}(12\%,3)) - \$6.0 \\ &= \$3.0(0.8929) + \$5.0(0.7972) + \$10.0(0.7118) - \$6.0 \\ &= \$2.6787 + \$3.9860 + \$7.1180 - \$6.0 \\ &= \$7.7827 \text{ million} = \$7,782,700. \end{aligned}$$

$$\begin{aligned} \text{NPV(B)} &= \$3.0(\text{PVIFA}(12\%,2)) + \$6.0(\text{PVIFA}(12\%,2))(\text{PVIF}(12\%,2)) \\ &\quad + \$10.0(\text{PVIF}(12\%,5)) - \$9.0 \\ &= \$3.0(1.6901) + \$6.0(1.6901)(0.7972) + \$10.0(0.5674) - \$9.0 \\ &= \$5.0703 + \$8.0841 + \$5.6740 - \$9.0 \\ &= \$9.8284 \text{ million} = \$9,828,400. \end{aligned}$$

Calculate the equivalent annual annuity:

$$\begin{aligned} \text{NPV(A)} &= \$7,782,700 = \text{EAA(A)}(\text{PVIFA}(12\%,3)) \\ \text{EAA(A)} &= \$7,782,700/2.4018 = \$3,240,361.40. \\ \text{NPV(B)} &= \$9,828,400 = \text{EAA(B)}(\text{PVIFA}(12\%,5)) \\ \text{EAA(B)} &= \$9,828,400/3.6048 = \$2,726,475.81. \end{aligned}$$

-----

A firm's reliance on debt \_\_\_\_\_ as bankruptcy costs increase. The debt ratio \_\_\_\_\_ as the probability of default increases.

- \* increases; decreases.
- \* decreases; decreases.
- \* increases; increases.
- \* decreases; increases.

That answer is incorrect.

Correct answer:

decreases; decreases.

Expected bankruptcy costs are a deterrent to high debt levels. These costs increase if the probability of default increases or the costs associated with the bankruptcy increase. In either of these cases, a firm will

reduce its reliance on debt.

-----

A consulting firm is currently under contract with a Busy Bus and Van Lines, Inc., and has agreed to formulate various financial reports and trend projections for the Company. During the most recent month, the consulting firm has been able to determine the following; Busy Bus and Van Lines currently pays out 30% of its net income as dividends, and this rate is expected to remain stable. Additionally, Busy has maintained a steady ROE of 15% for the last ten years, and this is also expected to remain stable. The risk-free rate of return is 5.35%, and the firm is in a 35% combined state/federal income tax rate. Finally, Busy Bus and Van Lines has informed the consulting firm that its shareholders require a 12.5% or greater rate of return, and the firm's common stock is priced at \$9.65.

Using the Retention Growth Rate method, which of the following most closely resembles the growth rate of Busy Bus and Van Lines, Inc.?

- \* 12.5%
- \* 184%
- \* 19.5%
- \* The growth rate of this firm cannot be determined from the information provided.
- \* 15.85%
- \* 10.5%

That answer is incorrect.

Correct answer:

10.5%

When security analysts estimate growth rates, the Retention Growth Rate method is often the method employed. In estimating growth using this model, the retention rate (defined as the percentage of net income that is retained within the firm and not distributed as dividends), is multiplied by the figure for ROE. The calculation of the answer in this example is as follows:  $\{(1 - \text{payout ratio } 30\%) * \text{ROE } 15\% = 10.5\%$ . This method is most useful when the growth rate or the components of the equation are expected to remain stable.

-----

Consider the following characteristics of a firm:

Stock price \$60

Annual dividend \$1

Debt rate 12%

Equity floatation cost 5%

Tax rate 40%

Preferred Stock Par value \$100

What is the firm's after tax cost of debt?

- \* 1.8%
- \* 5%
- \* 7.2%
- \* 12%
- \* 1.7%
- \* 60%

That answer is incorrect.

Correct answer:

7.2%

A firm's after tax cost of debt may be calculated using the following formula: After Tax Cost of Debt = Cost of Debt x (1 - Tax Rate). In this case the After Tax Cost of Debt =  $12\% \times (1 - 40\%) = 12\% \times 60\% = 7.2\%$ .

-----