

Use the table for the questions 18 and 19 below.

The following table summarizes prices of various default-free zero-coupon bonds (expressed as a percentage of face value):

Maturity (years)	1	2	3	4	5
Price (per \$100 face value)	94.52	89.68	85.40	81.65	78.35

18) The yield to maturity for the two year zero-coupon bond is closest to:

- A) 6.0%
- B) 5.8%
- C) 5.6%
- D) 5.5%

Answer: C

$$\begin{aligned} \text{yield} &= (100 / \text{price})^{(1/n)} - 1 \\ &= (100 / 89.68)^{.5} - 1 = .056 \text{ or } 5.6\% \end{aligned}$$

19) Based upon the information provided in the table above, you can conclude

- A) that the yield curve is flat.
- B) nothing about the shape of the yield curve.
- C) that the yield curve is downward sloping.
- D) that the yield curve is upward sloping.

Answer: C

20) You expect that Bean Enterprises will have earnings per share of \$2 for the coming year. Bean plans to retain all of its earnings for the next three years. For the subsequent two years, the firm plans on retaining 50% of its earnings. It will then retain only 25% of its earnings from that point forward. Retained earnings will be invested in projects with an expected return of 20% per year. If Bean's equity cost of capital is 12%, then the price of a share of Bean's stock is closest to:

- A) \$17.00
- B) \$10.75
- C) \$27.75
- D) \$43.50

Answer: C

Explanation: A)

B)

Year	Earnings	Dividends	g
1	\$2.00	\$0.00	20%
2	\$2.40	\$0.00	20%
3	\$2.88	\$0.00	20%
4	\$3.46	\$1.73	10%
5	\$3.80	\$1.90	10%
6	\$4.18	\$3.14	5%

$$P_0 = 1.73 / (1.12)^4 + 1.90 / 1.12^5 + (3.14 / (.12 - .05)) / 1.12^5 = 27.63$$

Each g is calculated as the 20% return on the projects \times the retention ratio.

D)

Use the information for the question 21 below.

You expect CCM Corporation to generate the following free cash flows over the next five years:

Year	1	2	3	4	5
FCF (\$ millions)	25	28	32	37	40

Following year five, you estimate that CCM's free cash flows will grow at 5% per year and that CCM's weighted average cost of capital is 13%.

21) The enterprise value of CCM corporation is closest to:

- A) \$396 million
- B) \$290 million
- C) \$382 million
- D) \$350 million

Answer: A

Explanation: A)
$$V_0 = \frac{FCF_1}{1+r_{wacc}} + \frac{FCF_2}{(1+r_{wacc})^2} + \dots + \frac{FCF_N}{(1+r_{wacc})^N} + \frac{V_N}{(1+r_{wacc})^N}$$

$$V_0 = \frac{25}{1+.13} + \frac{28}{(1+.13)^2} + \frac{32}{(1+.13)^3} + \frac{37}{(1+.13)^4} + \frac{40}{(1+.13)^4} = 395.58 \text{ million}$$

Use the table for the question 22 below.

Consider the following Price and Dividend data for General Motors:

Date	Price (\$)	Dividend (\$)
December 31, 2004	\$40.06	
February 9, 2005	\$36.80	\$0.50
May 7, 2005	\$30.41	\$0.50
August 10, 2005	\$34.86	\$0.50
November 8, 2005	\$25.86	\$0.50
December 30, 2005	\$18.86	

22) Assume that you purchased General Motors stock at the closing price on December 31, 2004 and sold it at the closing price on December 30, 2005. Your realized annual return is for the year 2005 is closest to:

- A) -30.04%
- B) -23.79%
- C) -49.85%
- D) -18.97%

Answer: C

Answer: C

Date	Price (\$)	Dividend (\$)	Return	(1 + return)
December 31, 2004	\$40.06		0.00%	1
January 26, 2005	\$36.80	\$0.50	-6.89%	0.931103
April 28, 2005	\$30.41	\$0.50	-16.01%	0.839946
July 29, 2005	\$34.86	\$0.50	16.28%	1.162775
October 28, 2005	\$25.86	\$0.50	-24.38%	0.756168
December 30, 2005	\$18.86		-27.07%	0.501506

The Product of (1 + returns) - 1 = -0.49849

The last column in the table contains the cumulative product of (1 + returns)

23) Which of the following statements is false?

- A) Firm specific news is good or bad news about the company itself.
- B) Firms are affected by both systematic and firm-specific risk.
- C) When firms carry both types of risk, only the firm-specific risk will be diversified when we combine many firms' stocks into a portfolio.
- D) The risk premium for a stock is affected by its idiosyncratic risk.

Answer: D

Explanation: A)
B)
C)
D)

The risk premium for a stock is affected by its systematic risk.

Use the table for the question 24 below.

Consider the following covariances between securities:

	Duke	Microsoft	Wal-Mart
Duke	0.0568	-0.0193	0.0037
Microsoft	-0.0193	0.2420	0.1277
Wal-Mart	0.0037	0.1277	0.1413

24) The variance on a portfolio that is made up of equal investments in Duke Energy and Microsoft stock is closest to:

- A) 0.065
- B) 0.090
- C) 0.149
- D) -0.020

Answer: A

Explanation: A) $Var(R_p) = x_1^2 Var(R_1) + x_2^2 Var(R_2) + 2x_1x_2 Cov(R_1, R_2)$
 $= (.50)^2(0.0568) + (.50)^2(0.2420) + 2(.5)(.5)(-0.0193) = 0.0651$
B)
C)
D)

25) Which of the following statements is false?

- A) The volatility declines as the number of stocks in a portfolio grows.
- B) An equally weighted portfolio is a portfolio in which the same amount is invested in each stock.
- C) As the number of stocks in a portfolio grows large, the variance of the portfolio is determined primarily by the average covariance among the stocks.
- D) When combining stocks into a portfolio that puts positive weight on each stock, unless all of the stocks are uncorrelated with the portfolio, the risk of the portfolio will be lower than the weighted average volatility of the individual stocks.

Answer: D

26) Which of the following statements is false?

- A) Because all investors should hold the risky securities in the same proportions as the efficient portfolio, their combined portfolio will also reflect the same proportions as the efficient portfolio.
- B) When the CAPM assumptions hold, choosing an optimal portfolio is relatively straightforward: it is the combination of the risk-free investment and the market portfolio.
- C) Graphically, when the tangent line goes through the market portfolio, it is called the security market line (SML).
- D) A portfolio's risk premium and volatility are determined by the fraction that is invested in the market.

Answer: C

Explanation: A)

B)

- C) Graphically, when the tangent line goes through the market portfolio, it is called the capital market line (CML).

27) Which of the following statements is false?

- A) Securities that tend to move more than the market have betas higher than 0.
- B) Securities whose returns tend to move in tandem with the market on average have a beta of 1.
- C) Beta corresponds to the slope of the best fitting line in the plot of the securities excess returns versus the market excess return.
- D) The statistical technique that identifies the best-fitting line through a set of points is called linear regression.

Answer: A

Use the information for the question 28 below.

Consider a project with free cash flows in one year of \$90,000 in a weak economy or \$117,000 in a strong economy, with each outcome being equally likely. The initial investment required for the project is \$80,000, and the project's cost of capital is 15%. The risk-free interest rate is 5%.

28) Suppose that to raise the funds for the initial investment, the project is sold to investors as an all-equity firm.

The equity holders will receive the cash flows of the project in one year. The market value of the unlevered equity for this project is closest to:

- A) \$10,000
- B) \$90,000
- C) \$86,250
- D) \$98,600

Answer: B

Explanation: A)

B)
$$PV(\text{equity cash flows}) = \frac{(.5)\$90,000 + (.5)\$117,000}{1.15} = \$90,000$$

C)

D)

29) Which of the following is not one of Modigliani and Miller's set of conditions referred to as perfect capital markets?

- A) All investors hold the efficient portfolio of assets.
- B) There are no taxes, transaction costs, or issuance costs associated with security trading.
- C) A firm's financing decisions do not change the cash flows generated by its investments, nor do they reveal new information about them.
- D) Investors and firms can trade the same set of securities at competitive market prices equal to the present value of their future cash flows.

Answer: A

Use the information for the question 30 below.

LCMS Industries has \$70 million in debt outstanding. The firm will pay only interest on this debt (the debt is perpetual). LCMS' marginal tax rate is 35% and the firm pays a rate of 8% interest on its debt.

30) Assuming that the risk of the tax shield is only 6% even though the loan pays 8%, then the present value of LCMS' interest tax shield is closest to:

- A) \$24.5 million
- B) \$18.0 million
- C) \$33.0 million
- D) \$20.0 million

Answer: C

Explanation: $PV \text{ of Tax shield} = \text{debt} \times \tau_c \times r_D / RD2 = \$70M \times .35 \times .08 / .06 = 32.67$

Use the information for the question 31 below.

Flagstaff Enterprises expected to have free cash flow in the coming year of \$8 million, and this free cash flow is expected to grow at a rate of 3% per year thereafter. Flagstaff has an equity cost of capital of 13%, a debt cost of capital of 7%, and it is in the 35% corporate tax bracket.

31) If Flagstaff currently maintains a .5 debt to equity ratio, then the value of Flagstaff as an all equity firm would be closest to:

- A) \$80 million
- B) \$100 million
- C) \$73 million
- D) \$115 million

Answer: B

Explanation: A)

B) $r_{wacc} = \frac{E}{E+D} r_E + \frac{D}{E+D} r_D \text{ (Pre tax)}$

$$r_{wacc} = \frac{1}{1+.5} .13 + \frac{.5}{1+.5} .07 = .11$$

$$VU = \frac{FCF}{rE - g} = \frac{\$80}{.11 - .03} = \$100 \text{ million}$$

C)

D)

Use the information for the question 32 below.

Monsters Incorporated (MI) is ready to launch a new product. Depending upon the success of this product, MI will have a value of either \$100 million, \$150 million, or \$191 million, with each outcome being equally likely. The cash flows are unrelated to the state of the economy (i.e. risk from the project is diversifiable) so that the project has a beta of 0 and a cost of capital equal to the risk-free rate, which is currently 5%. Assume that the capital markets are perfect.

- 32) Suppose that MI has zero-coupon debt with a \$140 million face value due next year. Assume that in the event of default, 20% of the value of MI's assets will be lost in bankruptcy costs. Calculate the value of levered equity, the value of debt, and the total value of MI with leverage is closest to:
- A) \$120.53 million
 B) \$172.49 million
 C) \$133.65 million
 D) \$157.38 million

Answer: C

$$\text{Explanation: } V^L = \frac{1/3(0) + 1/3(10) + 1/3(51)}{1.05} = \$19.37 \text{ million}$$

$$V_{\text{debt}} = \frac{1/3(100(1 - .20)) + 1/3(140) + 1/3(140)}{1.05} = \$114.29 \text{ million}$$

$$\text{Total Value} = V^L + V_{\text{debt}} = \$19.37 + \$114.29 = \$133.66 \text{ million}$$

Use the information for the question 33 below.

Big Blue Banana (BBB) is a clothing retailer with a current share price of \$10.00 and with 25 million shares outstanding. Suppose that Big Blue Banana announces plans to lower its corporate taxes by borrowing \$100 million and using the proceeds to repurchase shares.

- 33) Suppose that BBB pays corporate taxes of 35% and that shareholders expect the change in debt to be permanent. Assume that capital markets are perfect except for the existence of corporate taxes and financial distress costs. If the price of BBB's stock rises to \$10.85 per share following the announcement, then the present value of BBB's financial distress costs is closest to:
- A) \$21.25 million
 B) \$35.00 million
 C) \$11.40 million
 D) \$13.75 million

Answer: D

$$\text{Explanation: } V^U = \$10.00 \times 25 \text{ million shares} = \$250 \text{ million}$$

$$V^L = V^U + \tau_c B = \$250 + .35(\$100) = \$285 \text{ million} / 25 \text{ million shares} = \$11.40$$

$$\text{PV of financial distress costs} = (\$11.40 - \$10.85) \times 25 \text{ million shares} = \$13.75 \text{ million}$$

Use the information for the question 34 below.

Omicron Industries' Market Value Balance Sheet (\$ Millions) and Cost of Capital

Assets	Liabilities		Cost of Capital	
Cash	20	Debt	220	Debt 6%
Other Assets	500	Equity	300	Equity 12%
				τ_c 35%

Omicron Industries New Project Free Cash Flows

Year	0	1	2	3
Free Cash Flows	(\$100)	\$40	\$50	\$60

Assume that this new project is of average risk for Omicron and that the firm wants to hold constant its debt to equity ratio.

- 34) The NPV for Omicron's new project is closest to:
- A) \$23.75
 B) \$27.50

C) \$28.75

D) \$25.75

Answer: D

Explanation: A)

B)

C)

D) $r_{wacc} = \frac{E}{E+D} r_E + \frac{D}{E+D} r_D (1 - \tau_c)$, where $D = \text{net debt} = \text{Debt} - \text{Cash}$

$$r_{wacc} = \frac{300}{300+200} (.12) + \frac{200}{300+200} (.06)(1 - .35) = .0876$$

$$NPV = -100 + \frac{40}{(1.0876)^1} + \frac{50}{(1.0876)^2} + \frac{60}{(1.0876)^3} = \$25.69$$

35) The Debt Capacity for Omicron's new project in year 0 is closest to:

- A) \$38.75
- B) \$75.50
- C) \$50.25
- D) \$10.25

Answer: C

Explanation: A)

B)

C) $r_{wacc} = \frac{E}{E+D} r_E + \frac{D}{E+D} r_D (1 - \tau_c)$, where $D = \text{net debt} = \text{Debt} - \text{Cash}$

$$r_{wacc} = \frac{300}{300+200} (.12) + \frac{200}{300+200} (.06)(1 - .35) = .0876$$

$$V_0^L = \frac{40}{(1.0876)^1} + \frac{50}{(1.0876)^2} + \frac{60}{(1.0876)^3} = \$125.69$$

$$D_0 = d \times V_0^L$$

$$D_0 = \frac{200}{300+200} (\$125.69) = \$50.28$$

