PRACTICE PROBLEMS

1 Akihiko Takabe has designed a sophisticated forecasting model, which predicts the movements in the overall stock market, in the hope of earning a return in excess of a fair return for the risk involved. He uses the predictions of the model to decide whether to buy, hold, or sell the shares of an index fund that aims to replicate the movements of the stock market. Takabe would *best* be characterized as a(n):

A hedger.

B investor.

C information-motivated trader.

2 James Beach is young and has substantial wealth. A significant proportion of his stock portfolio consists of emerging market stocks that offer relatively high expected returns at the cost of relatively high risk. Beach believes that investment in emerging market stocks is appropriate for him given his ability and willingness to take risk. Which of the following labels *most appropriately* describes Beach?

A Hedger.

B Investor.

C Information-motivated trader.

3 Lisa Smith owns a manufacturing company in the United States. Her company has sold goods to a customer in Brazil and will be paid in Brazilian real (BRL) in three months. Smith is concerned about the possibility of the BRL depreciating more than expected against the US dollar (USD). Therefore, she is planning to sell three-month futures contracts on the BRL. The seller of such contracts generally gains when the BRL depreciates against the USD. If Smith were to sell these future contracts, she would *most appropriately* be described as a(n):

A hedger.

B investor.

C information-motivated trader.

4 Which of the following is *not* a function of the financial system?

A To regulate arbitrageurs' profits (excess returns).

B To help the economy achieve allocational efficiency.

C To facilitate borrowing by businesses to fund current operations.

5 An investor primarily invests in stocks of publicly traded companies. The investor wants to increase the diversification of his portfolio. A friend has recommended investing in real estate properties. The purchase of real estate would *best* be characterized as a transaction in the:

A derivative investment market.

B traditional investment market.

C alternative investment market.

6 A hedge fund holds its excess cash in 90-day commercial paper and negotiable certificates of deposit. The cash management policy of the hedge fund is *best described* as using:

A capital market instruments.

B money market instruments.

C intermediate-term debt instruments.

7 An oil and gas exploration and production company announces that it is offering 30 million shares to the public at $45.50 each. This transaction is *most likely* a sale in the:

A futures market.

B primary market.

C secondary market.

8 Consider a mutual fund that invests primarily in fixed-income securities that have been determined to be appropriate given the fund's investment goal. Which of the following is *least likely* to be a part of this fund?

A Warrants.

B Commercial paper.

C Repurchase agreements.

9 A friend has asked you to explain the differences between open-end and closed-end funds. Which of the following will you *most likely* include in your explanation?

A Closed-end funds are unavailable to new investors.

B When investors sell the shares of an open-end fund, they can receive a discount or a premium to the fund's net asset value.

C When selling shares, investors in an open-end fund sell the shares back to the fund whereas investors in a closed-end fund sell the shares to others in the secondary market.

10 The usefulness of a forward contract is limited by some problems. Which of the following is *most likely* one of those problems?

A Once you have entered into a forward contract, it is difficult to exit from the contract.

B Entering into a forward contract requires the long party to deposit an initial amount with the short party.

C If the price of the underlying asset moves adversely from the perspective of the long party, periodic payments must be made to the short party.

11 Tony Harris is planning to start trading in commodities. He has heard about the use of futures contracts on commodities and is learning more about them. Which of the following is Harris *least likely* to find associated with a futures contract?

A Existence of counterparty risk.

B Standardized contractual terms.

C Payment of an initial margin to enter into a contract.

12 A German company that exports machinery is expecting to receive $10 million in three months. The firm converts all its foreign currency receipts into euros. The chief financial officer of the company wishes to lock in a minimum fixed rate for converting the $10 million to euro but also wants to keep the flexibility to use the future spot rate if it is favorable. What hedging transaction is *most likely* to achieve this objective?

A Selling dollars forward.

B Buying put options on the dollar.

C Selling futures contracts on dollars.

13 A book publisher requires substantial quantities of paper. The publisher and a paper producer have entered into an agreement for the publisher to buy and the producer to supply a given quantity of paper four months later at a price agreed upon today. This agreement is a:

A futures contract.

B forward contract.

C commodity swap.

14 The Standard & Poor's Depositary Receipts (SPDRs) is an investment that tracks the S&P 500 stock market index. Purchases and sales of SPDRs during an average trading day are *best* described as:

A primary market transactions in a pooled investment.

B secondary market transactions in a pooled investment.

C secondary market transactions in an actively managed investment.

15 The Standard & Poor's Depositary Receipts (SPDRs) is an exchange-traded fund in the United States that is designed to track the S&P 500 stock market index. The latest price of a share of SPDRs is $290. A trader has just bought call options on shares of SPDRs for a premium of $3 per share. The call options expire in six months and have an exercise price of $305 per share. On the expiration date, the trader will exercise the call options (ignore any transaction costs) if and only if the shares of SPDRs are trading:

A below $305 per share.

B above $305 per share.

C above $308 per share.

16 Which of the following statements about exchange-traded funds is *most correct*?

A Exchange-traded funds are not backed by any assets.

B The investment companies that create exchange-traded funds are financial intermediaries.

C The transaction costs of trading shares of exchange-traded funds are substantially greater than the combined costs of trading the underlying assets of the fund.

17 Jason Schmidt works for a hedge fund and he specializes in finding profit opportunities that are the result of inefficiencies in the market for convertible bonds—bonds that can be converted into a predetermined amount of a company's common stock. Schmidt tries to find convertibles that are priced inefficiently relative to the underlying stock. The trading strategy involves the simultaneous purchase of the convertible bond and the short sale of the underlying common stock. The above process could best be described as:

A hedging.

B arbitrage.

C securitization.

18 Pierre-Louis Robert just purchased a call option on shares of the Michelin Group. A few days ago he wrote a put option on Michelin shares. The call and put options have the same exercise price, expiration date, and number of shares underlying. Considering both positions, Robert's exposure to the risk of the stock of the Michelin Group is:

A long.

B short.

C neutral.

19 An online brokerage firm has set the minimum margin requirement at 55 percent. What is the maximum leverage ratio associated with a position financed by this minimum margin requirement?

A 1.55.

B 1.82.

C 2.22.

20 A trader has purchased 200 shares of a non-dividend-paying firm on margin at a price of \$50 per share. The leverage ratio is 2.5. Six months later, the trader sells these shares at \$60 per share. Ignoring the interest paid on the borrowed amount and the transaction costs, what was the return to the trader during the six-month period?

A 20 percent.

B 33.33 percent.

C 50 percent.

21 Jason Williams purchased 500 shares of a company at \$32 per share. The stock was bought on 75 percent margin. One month later, Williams had to pay interest on the amount borrowed at a rate of 2 percent per month. At that time, Williams received a dividend of \$0.50 per share. Immediately after that he sold the shares at \$28 per share. He paid commissions of \$10 on the purchase and \$10 on the sale of the stock. What was the rate of return on this investment for the one-month period?

A −12.5 percent.

B −15.4 percent.

C −50.1 percent.

22 Caroline Rogers believes the price of Gamma Corp. stock will go down in the near future. She has decided to sell short 200 shares of Gamma Corp. at the current market price of €47. The initial margin requirement is 40 percent. Which of the following is an appropriate statement regarding the margin requirement that Rogers is subject to on this short sale?

A She will need to contribute €3,760 as margin.

B She will need to contribute €5,640 as margin.

C She will only need to leave the proceeds from the short sale as deposit and does not need to contribute any additional funds.

23 The current price of a stock is \$25 per share. You have \$10,000 to invest. You borrow an additional \$10,000 from your broker and invest \$20,000 in the stock. If the maintenance margin is 30 percent, at what price will a margin call first occur?

A \$9.62.

B \$17.86.

C \$19.71.

24 You have placed a sell market-on-open order—a market order that would automatically be submitted at the market's open tomorrow and would fill at the market price. Your instruction, to sell the shares at the market open, is a(n):

A execution instruction.

B validity instruction.

C clearing instruction.

25 A market has the following limit orders standing on its book for a particular stock. The bid and ask sizes are number of shares in hundreds.

Bid Size	Limit Price (€)	Offer Size
5	9.73	
12	9.81	
4	9.84	
6	9.95	
	10.02	5
	10.10	12
	10.14	8

What is the market?

A 9.73 bid, offered at 10.14.

B 9.81 bid, offered at 10.10.

C 9.95 bid, offered at 10.02.

26 Consider the following limit order book for a stock. The bid and ask sizes are number of shares in hundreds.

Bid Size	Limit Price (¥)	Offer Size
3	122.80	
8	123.00	
4	123.35	
	123.80	7
	124.10	6
	124.50	7

A new buy limit order is placed for 300 shares at ¥123.40. This limit order is said to:

A take the market.

B make the market.

C make a new market.

27 Currently, the market in a stock is "$54.62 bid, offered at $54.71." A new sell limit order is placed at $54.62. This limit order is said to:

A take the market.

B make the market.

C make a new market.

28 Jim White has sold short 100 shares of Super Stores at a price of $42 per share. He has also simultaneously placed a "good-till-cancelled, stop 50, limit 55 buy" order. Assume that if the stop condition specified by White is satisfied and the order becomes valid, it will get executed. Excluding transaction costs, what is the maximum possible loss that White can have?

A $800.

B $1,300.

C Unlimited.

29 You own shares of a company that are currently trading at $30 a share. Your technical analysis of the shares indicates a support level of $27.50. That is, if the price of the shares is going down, it is more likely to stay above this level rather than fall below it. If the price does fall below this level, however, you believe that the price may continue to decline. You have no immediate intent to sell the shares but are concerned about the possibility of a huge loss if the share price declines below the support level. Which of the following types of orders could you place to most appropriately address your concern?

A Short sell order.

B Good-till-cancelled stop sell order.

C Good-till-cancelled stop buy order.

30 In an underwritten offering, the risk that the entire issue may not be sold to the public at the stipulated offering price is borne by the:

A issuer.

B investment bank.

C buyers of the part of the issue that is sold.

31 A British company listed on AIM (formerly the Alternative Investment Market) of the London Stock Exchange announced the sale of 6,686,665 shares to a small group of qualified investors at £0.025 per share. Which of the following *best describes* this sale?

A Shelf registration.

B Private placement.

C Initial public offering.

32 A German publicly traded company, to raise new capital, gave its existing shareholders the opportunity to subscribe for new shares. The existing shareholders could purchase two new shares at a subscription price of €4.58 per share for every 15 shares held. This is an example of a(n):

A rights offering.

B private placement.

C initial public offering.

33 Consider an order-driven system that allows hidden orders. The following four sell orders on a particular stock are currently in the system's limit order book. Based on the commonly used order precedence hierarchy, which of these orders will have precedence over others?

Order	Time of Arrival (HH:MM:SS)	Limit Price (€)	Special Instruction (If any)
I	9:52:01	20.33	
II	9:52:08	20.29	Hidden order
III	9:53:04	20.29	
IV	9:53:49	20.29	

A Order I (time of arrival of 9:52:01).

B Order II (time of arrival of 9:52:08).

C Order III (time of arrival of 9:53:04).

34 Zhenhu Li has submitted an immediate-or-cancel buy order for 500 shares of a company at a limit price of CNY 74.25. There are two sell limit orders standing in that stock's order book at that time. One is for 300 shares at a limit price of CNY 74.30 and the other is for 400 shares at a limit price of CNY 74.35. How many shares in Li's order would get cancelled?

A None (the order would remain open but unfilled).

B 200 (300 shares would get filled).

C 500 (there would be no fill).

35 A market has the following limit orders standing on its book for a particular stock:

Buyer	Bid Size (Number of Shares)	Limit Price (£)	Offer Size (Number of Shares)	Seller
Keith	1,000	19.70		
Paul	200	19.84		
Ann	400	19.89		
Mary	300	20.02		
		20.03	800	Jack
		20.11	1,100	Margaret
		20.16	400	Jeff

Ian submits a day order to sell 1,000 shares, limit £19.83. Assuming that no more buy orders are submitted on that day after Ian submits his order, what would be Ian's average trade price?

A £19.70.

B £19.92.

C £20.05.

36 A financial analyst is examining whether a country's financial market is well functioning. She finds that the transaction costs in this market are low and trading volumes are high. She concludes that the market is quite liquid. In such a market:

A traders will find it hard to make use of their information.

B traders will find it easy to trade and their trading will make the market less informationally efficient.

C traders will find it easy to trade and their trading will make the market more informationally efficient.

37 The government of a country whose financial markets are in an early stage of development has hired you as a consultant on financial market regulation. Your first task is to prepare a list of the objectives of market regulation. Which of the following is *least likely* to be included in this list of objectives?

A Minimize agency problems in the financial markets.

B Ensure that financial markets are fair and orderly.

C Ensure that investors in the stock market achieve a rate of return that is at least equal to the risk-free rate of return.

SOLUTIONS

1 C is correct. Takabe is best characterized as an information-motivated trader. Takabe believes that his model provides him superior information about the movements in the stock market and his motive for trading is to profit from this information.

2 B is correct. Beach is an investor. He is simply investing in risky assets consistent with his level of risk aversion. Beach is not hedging any existing risk or using information to identify and trade mispriced securities. Therefore, he is not a hedger or an information-motivated trader.

3 A is correct. Smith is a hedger. The short position on the BRL futures contract offsets the BRL long position in three months. She is hedging the risk of the BRL depreciating against the USD. If the BRL depreciates, the value of the cash inflow goes down in USD terms but there is a gain on the futures contracts.

4 A is correct. Regulation of arbitrageurs' profits is not a function of the financial system. The financial system facilitates the allocation of capital to the best uses and the purposes for which people use the financial system, including borrowing money.

5 C is correct. The purchase of real estate properties is a transaction in the alternative investment market.

6 B is correct. The 90-day commercial paper and negotiable certificates of deposit are money market instruments.

7 B is correct. This transaction is a sale in the primary market. It is a sale of shares from the issuer to the investor and funds flow to the issuer of the security from the purchaser.

8 A is correct. Warrants are least likely to be part of the fund. Warrant holders have the right to buy the issuer's common stock. Thus, warrants are typically classified as equity and are least likely to be a part of a fixed-income mutual fund. Commercial paper and repurchase agreements are short-term fixed-income securities.

9 C is correct. When investors want to sell their shares, investors of an open-end fund sell the shares back to the fund whereas investors of a closed-end fund sell the shares to others in the secondary market. Closed-end funds are available to new investors but they must purchase shares in the fund in the secondary market. The shares of a closed-end fund trade at a premium or discount to net asset value.

10 A is correct. Once you have entered into a forward contract, it is difficult to exit from the contract. As opposed to a futures contract, trading out of a forward contract is quite difficult. There is no exchange of cash at the origination of a forward contract. There is no exchange on a forward contract until the maturity of the contract.

11 A is correct. Harris is least likely to find counterparty risk associated with a futures contract. There is limited counterparty risk in a futures contract because the clearinghouse is on the other side of every contract.

12 B is correct. Buying a put option on the dollar will ensure a minimum exchange rate but does not have to be exercised if the exchange rate moves in a favorable direction. Forward and futures contracts would lock in a fixed rate but would not allow for the possibility to profit in case the value of the dollar three months later in the spot market turns out to be greater than the value in the forward or futures contract.

13 B is correct. The agreement between the publisher and the paper supplier to respectively buy and supply paper in the future at a price agreed upon today is a forward contract.

14 B is correct. SPDRs trade in the secondary market and are a pooled investment vehicle.

15 B is correct. The holder of the call option will exercise the call options if the price is above the exercise price of \$305 per share. Note that if the stock price is above \$305 but less than \$308, the option would be exercised even though the net result for the option buyer after considering the premium is a loss. For example, if the stock price is \$307, the option buyer would exercise the option to make \$2 = \$307 – \$305 per share, resulting in a loss of \$1 = \$3 – \$2 after considering the premium. It is better to exercise and have a loss of only \$1, however, rather than not exercise and lose the entire \$3 premium.

16 B is correct. The investment companies that create exchange-traded funds (ETFs) are financial intermediaries. ETFs are securities that represent ownership in the assets held by the fund. The transaction costs of trading shares of ETFs are substantially lower than the combined costs of trading the underlying assets of the ETF.

17 B is correct. The process can best be described as arbitrage because it involves buying and selling instruments, whose values are closely related, at different prices in different markets.

18 A is correct. Robert's exposure to the risk of the stock of the Michelin Group is long. The exposure as a result of the long call position is long. The exposure as a result of the short put position is also long. Therefore, the combined exposure is long.

19 B is correct. The maximum leverage ratio is 1.82 = 100% position ÷ 55% equity. The maximum leverage ratio associated with a position financed by the minimum margin requirement is one divided by the minimum margin requirement.

20 C is correct. The return is 50 percent. If the position had been unleveraged, the return would be 20% = (60 – 50)/50. Because of leverage, the return is 50% = 2.5 × 20%.

Another way to look at this problem is that the equity contributed by the trader (the minimum margin requirement) is 40% = 100% ÷ 2.5. The trader contributed \$20 = 40% of \$50 per share. The gain is \$10 per share, resulting in a return of 50% = 10/20.

21 B is correct. The return is –15.4 percent.

Total cost of the purchase = \$16,000 = 500 × \$32

Equity invested = \$12,000 = 0.75 × \$16,000

Amount borrowed = \$4,000 = 16,000 – 12,000

Interest paid at month end = \$80 = 0.02 × \$4,000

Dividend received at month end = \$250 = 500 × \$0.50

Proceeds on stock sale = \$14,000 = 500 × \$28

Total commissions paid = \$20 = \$10 + \$10

Net gain/loss = –\$1,850 = –16,000 – 80 + 250 + 14,000 – 20

Initial investment including commission on purchase = \$12,010

Return = –15.4% = –\$1,850/\$12,010

22 A is correct. She will need to contribute €3,760 as margin. In view of the possibility of a loss, if the stock price goes up, she will need to contribute €3,760 = 40% of €9,400 as the initial margin. Rogers will need to leave the proceeds from the short sale (€9,400 = 200 × €47) on deposit.

23 B is correct. A margin call will first occur at a price of \$17.86. Because you have contributed half and borrowed the remaining half, your initial equity is 50 percent of the initial stock price, or \$12.50 = 0.50 × \$25. If P is the subsequent price, your equity would change by an amount equal to the change in price. So, your equity at price P would be 12.50 + (P – 25). A margin call will occur when the percentage margin drops to 30 percent. So, the price at which a margin call will occur is the solution to the following equation.

$$\frac{\text{Equity/Share}}{\text{Price/Share}} = \frac{12.50 + P - 25}{P} = 30\%$$

The solution is P = \$17.86.

24 B is correct. An instruction regarding when to fill an order is considered a validity instruction.

25 C is correct. The market is 9.95 bid, offered at 10.02. The best bid is at €9.95 and the best offer is €10.02.

26 C is correct. This order is said to make a new market. The new buy order is at ¥123.40, which is better than the current best bid of ¥123.35. Therefore, the buy order is making a new market. Had the new order been at ¥123.35, it would be said to make the market. Because the new buy limit order is at a price less than the best offer of ¥123.80, it will not immediately execute and is not taking the market.

27 A is correct. This order is said to take the market. The new sell order is at \$54.62, which is at the current best bid. Therefore, the new sell order will immediately trade with the current best bid and is taking the market.

28 B is correct. The maximum possible loss is \$1,300. If the stock price crosses \$50, the stop buy order will become valid and will get executed at a maximum limit price of \$55. The maximum loss per share is \$13 = \$55 – \$42, or \$1,300 for 100 shares.

29 B is correct. The most appropriate order is a good-till-cancelled stop sell order. This order will be acted on if the stock price declines below a specified price (in this case, \$27.50). This order is sometimes referred to as a good-till-cancelled stop loss sell order. You are generally bullish about the stock, as indicated by no immediate intent to sell, and would expect a loss on short selling the stock. A stop buy order is placed to buy a stock when the stock is going up.

30 B is correct. The investment bank bears the risk that the issue may be undersubscribed at the offering price. If the entire issue is not sold, the investment bank underwriting the issue will buy the unsold securities at the offering price.

31 B is correct. This sale is a private placement. As the company is already publicly traded, the share sale is clearly not an initial public offering. The sale also does not involve a shelf registration because the company is not selling shares to the public on a piecemeal basis.

32 A is correct. This offering is a rights offering. The company is distributing rights to buy stock at a fixed price to existing shareholders in proportion to their holdings.

33 C is correct. Order III (time of arrival of 9:53:04) has precedence. In the order precedence hierarchy, the first rule is price priority. Based on this rule, sell orders II, III, and IV get precedence over order I. The next rule is display

precedence at a given price. Because order II is a hidden order, orders III and IV get precedence. Finally, order III gets precedence over order IV based on time priority at same price and same display status.

34 C is correct. The order for 500 shares would get cancelled; there would be no fill. Li is willing to buy at CNY 74.25 or less but the minimum offer price in the book is CNY 74.30; therefore, no part of the order would be filled. Because Li's order is immediate-or-cancel, it would be cancelled.

35 B is correct. Ian's average trade price is:

$$£19.92 = \frac{300 \times £20.02 + 400 \times £19.89 + 200 \times £19.84}{300 + 400 + 200}$$

Ian's sell order first fills with the most aggressively priced buy order, which is Mary's order for 300 shares at £20.02. Ian still has 700 shares for sale. The next most aggressively priced buy order is Ann's order for 400 shares at £19.89. This order is filled. Ian still has 300 shares for sale. The next most aggressively priced buy order is Paul's order for 200 shares at £19.84. A third trade takes place. Ian still has 100 shares for sale.

The next buy order is Keith's order for 1,000 shares at £19.70. However, this price is below Ian's limit price of £19.83. Therefore, no more trade is possible.

36 C is correct. In such a market, well-informed traders will find it easy to trade and their trading will make the market more informationally efficient. In a liquid market, it is easier for informed traders to fill their orders. Their trading will cause prices to incorporate their information and the prices will be more in line with the fundamental values.

37 C is correct. Ensure that investors in the stock market achieve a rate of return that is at least equal to the risk-free rate of return is least likely to be included as an objective of market regulation. Stocks are risky investments and there would be occasions when a stock market investment would not only have a return less than the risk-free rate but also a negative return. Minimizing agency costs and ensuring that financial markets are fair and orderly are objectives of market regulation.

PRACTICE PROBLEMS

1 A security market index represents the:
   - **A** risk of a security market.
   - **B** security market as a whole.
   - **C** security market, market segment, or asset class.

2 Security market indexes are:
   - **A** constructed and managed like a portfolio of securities.
   - **B** simple interchangeable tools for measuring the returns of different asset classes.
   - **C** valued on a regular basis using the actual market prices of the constituent securities.

3 When creating a security market index, an index provider must first determine the:
   - **A** target market.
   - **B** appropriate weighting method.
   - **C** number of constituent securities.

4 One month after inception, the price return version and total return version of a single index (consisting of identical securities and weights) will be equal if:
   - **A** market prices have not changed.
   - **B** capital gains are offset by capital losses.
   - **C** the securities do not pay dividends or interest.

5 The values of a price return index and a total return index consisting of identical equal-weighted dividend-paying equities will be equal:
   - **A** only at inception.
   - **B** at inception and on rebalancing dates.
   - **C** at inception and on reconstitution dates.

6 An analyst gathers the following information for an equal-weighted index comprised of assets Able, Baker, and Charlie:

Security	Beginning of Period Price (€)	End of Period Price (€)	Total Dividends (€)
Able	10.00	12.00	0.75
Baker	20.00	19.00	1.00
Charlie	30.00	30.00	2.00

   The price return of the index is:
   - **A** 1.7%.
   - **B** 5.0%.
   - **C** 11.4%.

7 An analyst gathers the following information for an equal-weighted index comprised of assets Able, Baker, and Charlie:

Security	Beginning of Period Price (€)	End of Period Price (€)	Total Dividends (€)
Able	10.00	12.00	0.75
Baker	20.00	19.00	1.00
Charlie	30.00	30.00	2.00

The total return of the index is:

A 5.0%.

B 7.9%.

C 11.4%.

8 An analyst gathers the following information for a price-weighted index comprised of securities ABC, DEF, and GHI:

Security	Beginning of Period Price (£)	End of Period Price (£)	Total Dividends (£)
ABC	25.00	27.00	1.00
DEF	35.00	25.00	1.50
GHI	15.00	16.00	1.00

The price return of the index is:

A –4.6%.

B –9.3%.

C –13.9%.

9 An analyst gathers the following information for a market-capitalization-weighted index comprised of securities MNO, QRS, and XYZ:

Security	Beginning of Period Price (¥)	End of Period Price (¥)	Dividends per Share (¥)	Shares Outstanding
MNO	2,500	2,700	100	5,000
QRS	3,500	2,500	150	7,500
XYZ	1,500	1,600	100	10,000

The price return of the index is:

A –9.33%.

B –10.23%.

C –13.90%.

10 An analyst gathers the following information for a market-capitalization-weighted index comprised of securities MNO, QRS, and XYZ:

Security	Beginning of Period Price (¥)	End of Period Price (¥)	Dividends Per Share (¥)	Shares Outstanding
MNO	2,500	2,700	100	5,000
QRS	3,500	2,500	150	7,500
XYZ	1,500	1,600	100	10,000

The total return of the index is:

A 1.04%.

B –5.35%.

C –10.23%.

11 When creating a security market index, the target market:

A determines the investment universe.

B is usually a broadly defined asset class.

C determines the number of securities to be included in the index.

12 An analyst gathers the following data for a price-weighted index:

	Beginning of Period		End of Period	
Security	**Price (€)**	**Shares Outstanding**	**Price (€)**	**Shares Outstanding**
A	20.00	300	22.00	300
B	50.00	300	48.00	300
C	26.00	2,000	30.00	2,000

The price return of the index over the period is:

A 4.2%.

B 7.1%.

C 21.4%.

13 An analyst gathers the following data for a value-weighted index:

	Beginning of Period		End of Period	
Security	**Price (£)**	**Shares Outstanding**	**Price (£)**	**Shares Outstanding**
A	20.00	300	22.00	300
B	50.00	300	48.00	300
C	26.00	2,000	30.00	2,000

The return on the value-weighted index over the period is:

A 7.1%.

B 11.0%.

C 21.4%.

14 An analyst gathers the following data for an equally-weighted index:

	Beginning of Period		End of Period	
Security	**Price (¥)**	**Shares Outstanding**	**Price (¥)**	**Shares Outstanding**
A	20.00	300	22.00	300
B	50.00	300	48.00	300
C	26.00	2,000	30.00	2,000

The return on the index over the period is:

A 4.2%.

B 6.8%.

C 7.1%.

15 Which of the following index weighting methods requires an adjustment to the divisor after a stock split?

A Price weighting.

B Fundamental weighting.

C Market-capitalization weighting.

16 If the price return of an equal-weighted index exceeds that of a market-capitalization-weighted index comprised of the same securities, the *most likely* explanation is:

- **A** stock splits.
- **B** dividend distributions.
- **C** outperformance of small-market-capitalization stocks.

17 A float-adjusted market-capitalization-weighted index weights each of its constituent securities by its price and:

- **A** its trading volume.
- **B** the number of its shares outstanding.
- **C** the number of its shares available to the investing public.

18 Which of the following index weighting methods is most likely subject to a value tilt?

- **A** Equal weighting.
- **B** Fundamental weighting.
- **C** Market-capitalization weighting.

19 Rebalancing an index is the process of periodically adjusting the constituent:

- **A** securities' weights to optimize investment performance.
- **B** securities to maintain consistency with the target market.
- **C** securities' weights to maintain consistency with the index's weighting method.

20 Which of the following index weighting methods requires the most frequent rebalancing?

- **A** Price weighting.
- **B** Equal weighting.
- **C** Market-capitalization weighting.

21 Reconstitution of a security market index reduces:

- **A** portfolio turnover.
- **B** the need for rebalancing.
- **C** the likelihood that the index includes securities that are not representative of the target market.

22 Security market indexes are used as:

- **A** measures of investment returns.
- **B** proxies to measure unsystematic risk.
- **C** proxies for specific asset classes in asset allocation models.

23 Uses of market indexes do not include serving as a:

- **A** measure of systemic risk.
- **B** basis for new investment products.
- **C** benchmark for evaluating portfolio performance.

24 Which of the following statements regarding sector indexes is *most* accurate? Sector indexes:

- **A** track different economic sectors and cannot be aggregated to represent the equivalent of a broad market index.
- **B** provide a means to determine whether an active investment manager is more successful at stock selection or sector allocation.

C apply a universally agreed upon sector classification system to identify the constituent securities of specific economic sectors, such as consumer goods, energy, finance, health care.

25 Which of the following is an example of a style index? An index based on:

A geography.

B economic sector.

C market capitalization.

26 Which of the following statements regarding fixed-income indexes is *most* accurate?

A Liquidity issues make it difficult for investors to easily replicate fixed-income indexes.

B Rebalancing and reconstitution are the only sources of turnover in fixed-income indexes.

C Fixed-income indexes representing the same target market hold similar numbers of bonds.

27 An aggregate fixed-income index:

A comprises corporate and asset-backed securities.

B represents the market of government-issued securities.

C can be subdivided by market or economic sector to create more narrowly defined indexes.

28 Fixed-income indexes are *least likely* constructed on the basis of:

A maturity.

B type of issuer.

C coupon frequency.

29 Commodity index values are based on:

A futures contract prices.

B the market price of the specific commodity.

C the average market price of a basket of similar commodities.

30 Which of the following statements is *most* accurate?

A Commodity indexes all share similar weighting methods.

B Commodity indexes containing the same underlying commodities offer similar returns.

C The performance of commodity indexes can be quite different from that of the underlying commodities.

31 Which of the following is *not* a real estate index category?

A Appraisal index.

B Initial sales index.

C Repeat sales index.

32 A unique feature of hedge fund indexes is that they:

A are frequently equal weighted.

B are determined by the constituents of the index.

C reflect the value of private rather than public investments.

33 The returns of hedge fund indexes are *most likely*:

A biased upward.

B biased downward.

C similar across different index providers.

34 In comparison to equity indexes, the constituent securities of fixed-income indexes are:

A more liquid.

B easier to price.

C drawn from a larger investment universe.

SOLUTIONS

1 C is correct. A security market index represents the value of a given security market, market segment, or asset class.

2 A is correct. Security market indexes are constructed and managed like a portfolio of securities.

3 A is correct. The first decision is identifying the target market that the index is intended to represent because the target market determines the investment universe and the securities available for inclusion in the index.

4 C is correct. The difference between a price return index and a total return index consisting of identical securities and weights is the income generated over time by the underlying securities. If the securities in the index do not generate income, both indexes will be identical in value.

5 A is correct. At inception, the values of the price return and total return versions of an index are equal.

6 B is correct. The price return is the sum of the weighted returns of each security. The return of Able is 20 percent [(12 – 10)/10]; of Baker is –5 percent [(19 – 20)/20]; and of Charlie is 0 percent [(30 – 30)/30]. The price return index assigns a weight of 1/3 to each asset; therefore, the price return is 1/3 × [20% + (–5%) + 0%] = 5%.

7 C is correct. The total return of an index is calculated on the basis of the change in price of the underlying securities plus the sum of income received or the sum of the weighted total returns of each security. The total return of Able is 27.5 percent; of Baker is 0 percent; and of Charlie is 6.7 percent:

Able: (12 – 10 + 0.75)/10 = 27.5%

Baker: (19 – 20 + 1)/20 = 0%

Charlie: (30 – 30 + 2)/30 = 6.7%

An equal-weighted index applies the same weight (1/3) to each security's return; therefore, the total return = 1/3 × (27.5% + 0% + 6.7%) = 11.4%.

8 B is correct. The price return of the price-weighted index is the percentage change in price of the index: (68 – 75)/75 = –9.33%.

Security	Beginning of Period Price (£)	End of Period Price (£)
ABC	25.00	27.00
DEF	35.00	25.00
GHI	15.00	16.00
TOTAL	75.00	68.00

9 B is correct. The price return of the index is (48,250,000 – 53,750,000)/53,750,000 = –10.23%.

Security	Beginning of Period Price (¥)	Shares Outstanding	Beginning of Period Value (¥)	End of Period Price (¥)	End of Period Value (¥)
MNO	2,500	5,000	12,500,000	2,700	13,500,000
QRS	3,500	7,500	26,250,000	2,500	18,750,000

Security	Beginning of Period Price (¥)	Shares Outstanding	Beginning of Period Value (¥)	End of Period Price (¥)	End of Period Value (¥)
XYZ	1,500	10,000	15,000,000	1,600	16,000,000
Total			53,750,000		48,250,000

10 B is correct. The total return of the market-capitalization-weighted index is calculated below:

Security	Beginning of Period Value (¥)	End of Period Value (¥)	Total Dividends (¥)	Total Return (%)
MNO	12,500,000	13,500,000	500,000	12.00
QRS	26,250,000	18,750,000	1,125,000	–24.29
XYZ	15,000,000	16,000,000	1,000,000	13.33
Total	53,750,000	48,250,000	2,625,000	–5.35

11 A is correct. The target market determines the investment universe and the securities available for inclusion in the index.

12 A is correct. The sum of prices at the beginning of the period is 96; the sum at the end of the period is 100. Regardless of the divisor, the price return is 100/96 – 1 = 0.042 or 4.2 percent.

13 B is correct. It is the percentage change in the market value over the period:

Market value at beginning of period: (20 × 300) + (50 × 300) + (26 × 2,000) = 73,000

Market value at end of period: (22 × 300) + (48 × 300) + (30 × 2,000) = 81,000

Percentage change is 81,000/73,000 – 1 = 0.1096 or 11.0 percent with rounding.

14 C is correct. With an equal-weighted index, the same amount is invested in each security. Assuming $1,000 is invested in each of the three stocks, the index value is $3,000 at the beginning of the period and the following number of shares is purchased for each stock:

Security A: 50 shares

Security B: 20 shares

Security C: 38.46 shares.

Using the prices at the beginning of the period for each security, the index value at the end of the period is $3,213.8: ($22 × 50) + ($48 × 20) + ($30 × 38.46). The price return is $3,213.8/$3,000 – 1 = 7.1%.

15 A is correct. In the price weighting method, the divisor must be adjusted so the index value immediately after the split is the same as the index value immediately prior to the split.

16 C is correct. The main source of return differences arises from outperformance of small-cap securities or underperformance of large-cap securities. In an equal-weighted index, securities that constitute the largest fraction of the market are underrepresented and securities that constitute only a small fraction of the market are overrepresented. Thus, higher equal-weighted index returns will occur if the smaller-cap equities outperform the larger-cap equities.

17 C is correct. “Float” is the number of shares available for public trading.

18 B is correct. Fundamental weighting leads to indexes that have a value tilt.

19 C is correct. Rebalancing refers to adjusting the weights of constituent securities in an index to maintain consistency with the index's weighting method.

20 B is correct. Changing market prices will cause weights that were initially equal to become unequal, thus requiring rebalancing.

21 C is correct. Reconstitution is the process by which index providers review the constituent securities, re-apply the initial criteria for inclusion in the index, and select which securities to retain, remove, or add. Constituent securities that no longer meet the criteria are replaced with securities that do. Thus, reconstitution reduces the likelihood that the index includes securities that are not representative of the target market.

22 C is correct. Security market indexes play a critical role as proxies for asset classes in asset allocation models.

23 A is correct. Security market indexes are used as proxies for measuring market or systematic risk, not as measures of systemic risk.

24 B is correct. Sector indexes provide a means to determine whether a portfolio manager is more successful at stock selection or sector allocation.

25 C is correct. Style indexes represent groups of securities classified according to market capitalization, value, growth, or a combination of these characteristics.

26 A is correct. The large number of fixed-income securities—combined with the lack of liquidity of some securities—makes it costly and difficult for investors to replicate fixed-income indexes.

27 C is correct. An aggregate fixed-income index can be subdivided by market sector (government, government agency, collateralized, corporate), style (maturity, credit quality), economic sector, or some other characteristic to create more narrowly defined indexes.

28 C is correct. Coupon frequency is not a dimension on which fixed-income indexes are based.

29 A is correct. Commodity indexes consist of futures contracts on one or more commodities.

30 C is correct. The performance of commodity indexes can be quite different from that of the underlying commodities because the indexes consist of futures contracts on the commodities rather than the actual commodities.

31 B is correct. It is not a real estate index category.

32 B is correct. Hedge funds are not required to report their performance to any party other than their investors. Therefore, each hedge fund decides to which database(s) it will report its performance. Thus, for a hedge fund index, constituents determine the index rather than index providers determining the constituents.

33 A is correct. Voluntary performance reporting may lead to survivorship bias, and poorer performing hedge funds will be less likely to report their performance.

34 C is correct. The fixed-income market has more issuers and securities than the equity market.

PRACTICE PROBLEMS

1 In an efficient market, the change in a company's share price is *most likely* the result of:

A insiders' private information.

B the previous day's change in stock price.

C new information coming into the market.

2 Regulation that restricts some investors from participating in a market will *most likely*:

A impede market efficiency.

B not affect market efficiency.

C contribute to market efficiency.

3 With respect to efficient market theory, when a market allows short selling, the efficiency of the market is *most likely* to:

A increase.

B decrease.

C remain the same.

4 Which of the following regulations will *most likely* contribute to market efficiency? Regulatory restrictions on:

A short selling.

B foreign traders.

C insiders trading with nonpublic information.

5 Which of the following market regulations will *most likely* impede market efficiency?

A Restricting traders' ability to short sell.

B Allowing unrestricted foreign investor trading.

C Penalizing investors who trade with nonpublic information.

6 If markets are efficient, the difference between the intrinsic value and market value of a company's security is:

A negative.

B zero.

C positive.

7 The intrinsic value of an undervalued asset is:

A less than the asset's market value.

B greater than the asset's market value.

C the value at which the asset can currently be bought or sold.

8 The market value of an undervalued asset is:

A greater than the asset's intrinsic value.

B the value at which the asset can currently be bought or sold.

C equal to the present value of all the asset's expected cash flows.

9 With respect to the efficient market hypothesis, if security prices reflect *only* past prices and trading volume information, then the market is:

A weak-form efficient.

B strong-form efficient.

C semi-strong-form efficient.

10 Which one of the following statements *best* describes the semi-strong form of market efficiency?

A Empirical tests examine the historical patterns in security prices.

B Security prices reflect all publicly known and available information.

C Semi-strong-form efficient markets are not necessarily weak-form efficient.

11 If markets are semi-strong efficient, standard fundamental analysis will yield abnormal trading profits that are:

A negative.

B equal to zero.

C positive.

12 If prices reflect all public and private information, the market is *best* described as:

A weak-form efficient.

B strong-form efficient.

C semi-strong-form efficient.

13 If markets are semi-strong-form efficient, then passive portfolio management strategies are *most likely* to:

A earn abnormal returns.

B outperform active trading strategies.

C underperform active trading strategies.

14 If a market is semi-strong-form efficient, the risk-adjusted returns of a passively managed portfolio relative to an actively managed portfolio are *most likely*:

A lower.

B higher.

C the same.

15 Technical analysts assume that markets are:

A weak-form efficient.

B weak-form inefficient.

C semi-strong-form efficient.

16 Fundamental analysts assume that markets are:

A weak-form inefficient.

B semi-strong-form efficient.

C semi-strong-form inefficient.

17 If a market is weak-form efficient but semi-strong-form inefficient, then which of the following types of portfolio management is *most likely* to produce abnormal returns?

A Passive portfolio management.

B Active portfolio management based on technical analysis.

C Active portfolio management based on fundamental analysis.

18 An increase in the time between when an order to trade a security is placed and when the order is executed *most likely* indicates that market efficiency has:

A decreased.

B remained the same.

C increased.

19 With respect to efficient markets, a company whose share price reacts gradually to the public release of its annual report *most likely* indicates that the market where the company trades is:

A semi-strong-form efficient.

B subject to behavioral biases.

C receiving additional information about the company.

20 Which of the following is *least likely* to explain the January effect anomaly?

A Tax-loss selling.

B Release of new information in January.

C Window dressing of portfolio holdings.

21 If a researcher conducting empirical tests of a trading strategy using time series of returns finds statistically significant abnormal returns, then the researcher has *most likely* found:

A a market anomaly.

B evidence of market inefficiency.

C a strategy to produce future abnormal returns.

22 Which of the following market anomalies is inconsistent with weak-form market efficiency?

A Earnings surprise.

B Momentum pattern.

C Closed-end fund discount.

23 Researchers have found that value stocks have consistently outperformed growth stocks. An investor wishing to exploit the value effect should purchase the stock of companies with above-average:

A dividend yields.

B market-to-book ratios.

C price-to-earnings ratios.

24 With respect to rational and irrational investment decisions, the efficient market hypothesis requires:

A only that the market is rational.

B that all investors make rational decisions.

C that some investors make irrational decisions.

25 Observed overreactions in markets can be explained by an investor's degree of:

A risk aversion.

B loss aversion.

C confidence in the market.

26 Like traditional finance models, the behavioral theory of loss aversion assumes that investors dislike risk; however, the dislike of risk in behavioral theory is assumed to be:

A leptokurtic.

B symmetrical.

C asymmetrical.

SOLUTIONS

1 C is correct. Today's price change is independent of the one from yesterday, and in an efficient market, investors will react to new, independent information as it is made public.

2 A is correct. Reducing the number of market participants can accentuate market imperfections and impede market efficiency (e.g., restrictions on foreign investor trading).

3 A is correct. According to theory, reducing the restrictions on trading will allow for more arbitrage trading, thereby promoting more efficient pricing. Although regulators argue that short selling exaggerates downward price movements, empirical research indicates that short selling is helpful in price discovery.

4 C is correct. Regulation to restrict unfair use of nonpublic information encourages greater participation in the market, which increases market efficiency. Regulators (e.g., US SEC) discourage illegal insider trading by issuing penalties to violators of their insider trading rules.

5 A is correct. Restricting short selling will reduce arbitrage trading, which promotes market efficiency. Permitting foreign investor trading increases market participation, which makes markets more efficient. Penalizing insider trading encourages greater market participation, which increases market efficiency.

6 B is correct. A security's intrinsic value and market value should be equal when markets are efficient.

7 B is correct. The intrinsic value of an undervalued asset is greater than the market value of the asset, where the market value is the transaction price at which an asset can be currently bought or sold.

8 B is correct. The market value is the transaction price at which an asset can be currently bought or sold.

9 A is correct. The weak-form efficient market hypothesis is defined as a market where security prices fully reflect all market data, which refers to all past price and trading volume information.

10 B is correct. In semi-strong-form efficient markets, security prices reflect all publicly available information.

11 B is correct. If all public information should already be reflected in the market price, then the abnormal trading profit will be equal to zero when fundamental analysis is used.

12 B is correct. The strong-form efficient market hypothesis assumes all information, public or private, has already been reflected in the prices.

13 B is correct. Costs associated with active trading strategies would be difficult to recover; thus, such active trading strategies would have difficulty outperforming passive strategies on a consistent after-cost basis.

14 B is correct. In a semi-strong-form efficient market, passive portfolio strategies should outperform active portfolio strategies on a risk-adjusted basis.

15 B is correct. Technical analysts use past prices and volume to predict future prices, which is inconsistent with the weakest form of market efficiency (i.e., weak-form market efficiency). Weak-form market efficiency states that investors cannot earn abnormal returns by trading on the basis of past trends in price and volume.

16 C is correct. Fundamental analysts use publicly available information to estimate a security's intrinsic value to determine if the security is mispriced, which is inconsistent with the semi-strong form of market efficiency. Semi-strong-form market efficiency states that investors cannot earn abnormal returns by trading based on publicly available information.

17 C is correct. If markets are not semi-strong-form efficient, then fundamental analysts are able to use publicly available information to estimate a security's intrinsic value and identify misvalued securities. Technical analysis is not able to earn abnormal returns if markets are weak-form efficient. Passive portfolio managers outperform fundamental analysis if markets are semi-strong-form efficient.

18 A is correct. Operating inefficiencies reduce market efficiency.

19 C is correct. If markets are efficient, the information from the annual report is reflected in the stock prices; therefore, the gradual changes must be from the release of additional information.

20 B is correct. The excess returns in January are not attributed to any new information or news; however, research has found that part of the seasonal pattern can be explained by tax-loss selling and portfolio window dressing.

21 A is correct. Finding significant abnormal returns does not necessarily indicate that markets are inefficient or that abnormal returns can be realized by applying the strategy to future time periods. Abnormal returns are considered market anomalies because they may be the result of the model used to estimate the expected returns or may be the result of underestimating transaction costs or other expenses associated with implementing the strategy, rather than because of market inefficiency.

22 B is correct. Trading based on historical momentum indicates that price patterns exist and can be exploited by using historical price information. A momentum trading strategy that produces abnormal returns contradicts the weak form of the efficient market hypothesis, which states that investors cannot earn abnormal returns on the basis of past trends in prices.

23 A is correct. Higher than average dividend yield is a characteristic of a value stock, along with low price-to-earnings and low market-to-book ratios. Growth stocks are characterized by low dividend yields and high price-to-earnings and high market-to-book ratios.

24 A is correct. The efficient market hypothesis and asset-pricing models only require that the market is rational. Behavioral finance is used to explain *some* of the market anomalies as irrational decisions.

25 B is correct. Behavioral theories of loss aversion can explain observed overreaction in markets, such that investors dislike losses more than comparable gains (i.e., risk is not symmetrical).

26 C is correct. Behavioral theories of loss aversion allow for the possibility that the dislike for risk is not symmetrical, which allows for loss aversion to explain observed overreaction in markets such that investors dislike losses more than they like comparable gains.

PRACTICE PROBLEMS

1 Which of the following is *not* a characteristic of common equity?
  - A It represents an ownership interest in the company.
  - B Shareholders participate in the decision-making process.
  - C The company is obligated to make periodic dividend payments.

2 The type of equity voting right that grants one vote for each share of equity owned is referred to as:
  - A proxy voting.
  - B statutory voting.
  - C cumulative voting.

3 All of the following are characteristics of preference shares *except*:
  - A They are either callable or putable.
  - B They generally do not have voting rights.
  - C They do not share in the operating performance of the company.

4 Participating preference shares entitle shareholders to:
  - A participate in the decision-making process of the company.
  - B convert their shares into a specified number of common shares.
  - C receive an additional dividend if the company's profits exceed a predetermined level.

5 Which of the following statements about private equity securities is *incorrect*?
  - A They cannot be sold on secondary markets.
  - B They have market-determined quoted prices.
  - C They are primarily issued to institutional investors.

6 Venture capital investments:
  - A can be publicly traded.
  - B do not require a long-term commitment of funds.
  - C provide mezzanine financing to early-stage companies.

7 Which of the following statements *most accurately* describes one difference between private and public equity firms?
  - A Private equity firms are focused more on short-term results than public firms.
  - B Private equity firms' regulatory and investor relations operations are less costly than those of public firms.
  - C Private equity firms are incentivized to be more open with investors about governance and compensation than public firms.

8 Emerging markets have benefited from recent trends in international markets. Which of the following has *not* been a benefit of these trends?
  - A Emerging market companies do not have to worry about a lack of liquidity in their home equity markets.
  - B Emerging market companies have found it easier to raise capital in the markets of developed countries.

C Emerging market companies have benefited from the stability of foreign exchange markets.

9 When investing in unsponsored depository receipts, the voting rights to the shares in the trust belong to:

A the depository bank.

B the investors in the depository receipts.

C the issuer of the shares held in the trust.

10 With respect to Level III sponsored ADRs, which of the following is *least likely* to be accurate? They:

A have low listing fees.

B are traded on the NYSE, NASDAQ, and AMEX.

C are used to raise equity capital in US markets.

11 A basket of listed depository receipts, or an exchange-traded fund, would *most likely* be used for:

A gaining exposure to a single equity.

B hedging exposure to a single equity.

C gaining exposure to multiple equities.

12 Calculate the total return on a share of equity using the following data:

Purchase price: $50

Sale price: $42

Dividend paid during holding period: $2

A –12.0%

B –14.3%

C –16.0%

13 If a US-based investor purchases a euro-denominated ETF and the euro subsequently depreciates in value relative to the dollar, the investor will have a total return that is:

A lower than the ETF's total return.

B higher than the ETF's total return.

C the same as the ETF's total return.

14 Which of the following is *incorrect* about the risk of an equity security? The risk of an equity security is:

A based on the uncertainty of its cash flows.

B based on the uncertainty of its future price.

C measured using the standard deviation of its dividends.

15 From an investor's point of view, which of the following equity securities is the *least* risky?

A Putable preference shares.

B Callable preference shares.

C Non-callable preference shares.

16 Which of the following is *least likely* to be a reason for a company to issue equity securities on the primary market?

A To raise capital.

B To increase liquidity.

C To increase return on equity.

17 Which of the following is *not* a primary goal of raising equity capital?
A To finance the purchase of long-lived assets.
B To finance the company's revenue-generating activities.
C To ensure that the company continues as a going concern.

18 Which of the following statements is *most accurate* in describing a company's book value?
A Book value increases when a company retains its net income.
B Book value is usually equal to the company's market value.
C The ultimate goal of management is to maximize book value.

19 Calculate the book value of a company using the following information:

Number of shares outstanding	100,000
Price per share	€52
Total assets	€12,000,000
Total liabilities	€7,500,000
Net Income	€2,000,000

A €4,500,000.
B €5,200,000.
C €6,500,000.

20 Which of the following statements is *least accurate* in describing a company's market value?
A Management's decisions do not influence the company's market value.
B Increases in book value may not be reflected in the company's market value.
C Market value reflects the collective and differing expectations of investors.

21 Calculate the return on equity (ROE) of a stable company using the following data:

Total sales	£2,500,000
Net income	£2,000,000
Beginning of year total assets	£50,000,000
Beginning of year total liabilities	£35,000,000
Number of shares outstanding at the end of the year	1,000,000
Price per share at the end of the year	£20

A 10.0%.
B 13.3%.
C 16.7%.

22 Holding all other factors constant, which of the following situations will *most likely* lead to an increase in a company's return on equity?
A The market price of the company's shares increases.
B Net income increases at a slower rate than shareholders' equity.
C The company issues debt to repurchase outstanding shares of equity.

23 Which of the following measures is the *most difficult* to estimate?
A The cost of debt.
B The cost of equity.
C Investors' required rate of return on debt.

24 A company's cost of equity is often used as a proxy for investors':

A average required rate of return.

B minimum required rate of return.

C maximum required rate of return.

SOLUTIONS

1 C is correct. The company is not obligated to make dividend payments. It is at the discretion of the company whether or not it chooses to pay dividends.

2 B is correct. Statutory voting is the type of equity voting right that grants one vote per share owned.

3 A is correct. Preference shares do not have to be either callable or putable.

4 C is correct. Participating preference shares entitle shareholders to receive an additional dividend if the company's profits exceed a pre-determined level.

5 B is correct. Private equity securities do not have market-determined quoted prices.

6 C is correct. Venture capital investments can be used to provide mezzanine financing to companies in their early stage of development.

7 B is correct. Regulatory and investor relations costs are lower for private equity firms than for public firms. There are no stock exchange, regulatory, or shareholder involvements with private equity, whereas for public firms these costs can be high.

8 C is correct. The trends in emerging markets have not led to the stability of foreign exchange markets.

9 A is correct. In an unsponsored DR, the depository bank owns the voting rights to the shares. The bank purchases the shares, places them into a trust, and then sells shares in the trust—not the underlying shares—in other markets.

10 A is correct. The listing fees on Level III sponsored ADRs are high.

11 C is correct. An ETF is used to gain exposure to a basket of securities (equity, fixed income, commodity futures, etc.).

12 A is correct. The formula states $R_t = (P_t - P_{t-1} + D_t)/P_{t-1}$. Therefore, total return = (42 – 50 + 2)/50 = –12.0%.

13 A is correct. The depreciated value of the euro will create an additional loss in the form of currency return that is lower than the ETF's return.

14 C is correct. Some equity securities do not pay dividends, and therefore the standard deviation of dividends cannot be used to measure the risk of all equity securities.

15 A is correct. Putable shares, whether common or preference, give the investor the option to sell the shares back to the issuer at a pre-determined price. This pre-determined price creates a floor for the share's price that reduces the uncertainty of future cash flows for the investor (i.e., lowers risk relative to the other two types of shares listed).

16 C is correct. Issuing shares in the primary (and secondary) market *reduces* a company's return on equity because it increases the total amount of equity capital invested in the company (i.e., the denominator in the ROE formula).

17 C is correct. Capital is raised to ensure the company's existence only when it is required. It is not a typical goal of raising capital.

18 A is correct. A company's book value increases when a company retains its net income.

19 A is correct. The book value of the company is equal to total assets minus total liabilities, which is €12,000,000 – €7,500,000 = €4,500,000.

20 A is correct. A company's market value is affected by management's decisions. Management's decisions can directly affect the company's *book* value, which can then affect its market value.

21 B is correct. A company's ROE is calculated as (NI_t/BVE_{t-1}). The BVE_{t-1} is equal to the beginning total assets minus the beginning total liabilities, which equals £50,000,000 – £35,000,000 = £15,000,000. Therefore, ROE = £2,000,000/£15,000,000 = 13.3%.

22 C is correct. A company's ROE will increase if it issues debt to repurchase outstanding shares of equity.

23 B is correct. The cost of equity is not easily determined. It is dependent on investors' required rate of return on equity, which reflects the different risk levels of investors and their expectations about the company's future cash flows.

24 B is correct. Companies try to raise funds at the lowest possible cost. Therefore, cost of equity is used as a proxy for the minimum required rate of return.

PRACTICE PROBLEMS

1 Which of the following is *least likely* to involve industry analysis?
 A Sector rotation strategy.
 B Top-down fundamental investing.
 C Tactical asset allocation strategy.

2 A sector rotation strategy involves investing in a sector by:
 A making regular investments in it.
 B investing in a pre-selected group of sectors on a rotating basis.
 C timing investment to take advantage of business-cycle conditions.

3 Which of the following information about a company would *most likely* depend on an industry analysis? The company's:
 A dividend policy.
 B competitive environment.
 C trends in corporate expenses.

4 Which industry classification system uses a three-tier classification system?
 A Russell Global Sectors.
 B Industry Classification Benchmark.
 C Global Industry Classification Standard.

5 In which sector would a manufacturer of personal care products be classified?
 A Health care.
 B Consumer staples.
 C Consumer discretionary.

6 A automotive manufacturer is *most likely* classified in which of the following industry sectors?
 A Consumer staples
 B Industrial durables
 C Consumer discretionary

7 Which of the following statements about commercial and government industry classification systems is *most* accurate?
 A Many commercial classification systems include private for-profit companies.
 B Both commercial and government classification systems exclude not-for-profit companies.
 C Commercial classification systems are generally updated more frequently than government classification systems.

8 Which of the following is *not* a limitation of the cyclical/non-cyclical descriptive approach to classifying companies?
 A A cyclical company may have a growth component in it.
 B Business-cycle sensitivity is a discrete phenomenon rather than a continuous spectrum.
 C A global company can experience economic expansion in one part of the world while experiencing recession in another part.

9 A cyclical company is *most likely* to:
  A have low operating leverage.
  B sell relatively inexpensive products.
  C experience wider-than-average fluctuations in demand.

10 A company that is sensitive to the business cycle would *most likely*:
  A not have growth opportunities.
  B experience below-average fluctuation in demand.
  C sell products that the customer can purchase at a later date if necessary.

11 Which of the following factors would *most likely* be a limitation of applying business-cycle analysis to global industry analysis?
  A Some industries are relatively insensitive to the business cycle.
  B Correlations of security returns between different world markets are relatively low.
  C One region or country of the world may experience recession while another region experiences expansion.

12 Which of the following statements about peer groups is *most* accurate?
  A Constructing a peer group for a company follows a standardized process.
  B Commercial industry classification systems often provide a starting point for constructing a peer group.
  C A peer group is generally composed of all the companies in the most narrowly defined category used by the commercial industry classification system.

13 With regard to forming a company's peer group, which of the following statements is *not* correct?
  A Comments from the management of the company about competitors are generally not used when selecting the peer group.
  B The higher the proportion of revenue and operating profit of the peer company derived from business activities similar to the subject company, the more meaningful the comparison.
  C Comparing the company's performance measures with those for a potential peer-group company is of limited value when the companies are exposed to different stages of the business cycle.

14 When selecting companies for inclusion in a peer group, a company operating in three different business segments would:
  A be in only one peer group.
  B possibly be in more than one peer group.
  C not be included in any peer group.

15 An industry that *most likely* has both high barriers to entry and high barriers to exit is the:
  A restaurant industry.
  B advertising industry.
  C automobile industry.

16 Which factor is *most likely* associated with stable market share?
  A Low switching costs.
  B Low barriers to entry.
  C Slow pace of product innovation.

17 Which of the following companies *most likely* has the greatest ability to quickly increase its capacity?

A Restaurant.

B Steel producer.

C Legal services provider.

18 A population that is rapidly aging would *most likely* cause the growth rate of the industry producing eye glasses and contact lenses to:

A decrease.

B increase.

C not change.

19 If over a long period of time a country's average level of educational accomplishment increases, this development would *most likely* lead to the country's amount of income spent on consumer discretionary goods to:

A decrease.

B increase.

C not change.

20 If the technology for an industry involves high fixed capital investment, then one way to seek higher profit growth is by pursuing:

A economies of scale.

B diseconomies of scale.

C removal of features that differentiate the product or service provided.

21 Which of the following life-cycle phases is typically characterized by high prices?

A Mature.

B Growth.

C Embryonic.

22 In which of the following life-cycle phases are price wars *most likely* to be absent?

A Mature.

B Decline.

C Growth.

23 When graphically depicting the life-cycle model for an industry as a curve, the variables on the axes are:

A price and time.

B demand and time.

C demand and stage of the life cycle.

24 Industry consolidation and high barriers to entry *most likely* characterize which life-cycle stage?

A Mature

B Growth

C Embryonic

25 Which of the following is *most likely* a characteristic of a concentrated industry?

A Infrequent, tacit coordination.

B Difficulty in monitoring other industry members.

C Industry members attempting to avoid competition on price.

26 Which of the following industry characteristics is generally *least likely* to produce high returns on capital?

A High barriers to entry

B High degree of concentration

C Short lead time to build new plants

27 An industry with high barriers to entry and weak pricing power *most likely* has:

A high barriers to exit.

B stable market shares.

C significant numbers of issued patents.

28 Economic value is created for an industry's shareholders when the industry earns a return:

A below the cost of capital.

B equal to the cost of capital.

C above the cost of capital.

29 Which of the following industries is *most likely* to be characterized as concentrated with strong pricing power?

A Asset management.

B Alcoholic beverages.

C Household and personal products.

30 With respect to competitive strategy, a company with a successful cost leadership strategy is *most likely* characterized by:

A a low cost of capital.

B reduced market share.

C the ability to offer products at higher prices than competitors.

31 When conducting a company analysis, the analysis of demand for a company's product is *least likely* to consider the:

A company's cost structure.

B motivations of the customer base.

C product's differentiating characteristics.

32 Which of the following statements about company analysis is *most* accurate?

A The complexity of spreadsheet modeling ensures precise forecasts of financial statements.

B The interpretation of financial ratios should focus on comparing the company's results over time but not with competitors.

C The corporate profile would include a description of the company's business, investment activities, governance, and strengths and weaknesses.

SOLUTIONS

1 C is correct. Tactical asset allocation involves timing investments in asset classes and does not make use of industry analysis.

2 C is correct. A sector rotation strategy is conducted by investors wishing to time investment in industries through an analysis of fundamentals and/or business-cycle conditions.

3 B is correct. Determination of a company's competitive environment depends on understanding its industry.

4 A is correct. The Russell system uses three tiers, whereas the other two systems are based on four tiers or levels.

5 B is correct. Personal care products are classified as consumer staples in the "Description of Representative Sectors."

6 C is correct. Automotive manufacturers are classified as consumer discretionary. Consumer discretionary companies derive a majority of revenue from the sale of consumer-related products for which demand tends to exhibit a high degree of economic sensitivity—that is, high demand during periods of economic expansion and low demand during periods of contraction.

7 C is correct. Commercial systems are generally updated more frequently than government systems, and include only publicly traded for-profit companies.

8 B is correct. Business-cycle sensitivity falls on a continuum and is not a discrete "either–or" phenomenon.

9 C is correct. Cyclical companies are sensitive to the business cycle, with low product demand during periods of economic contraction and high product demand during periods of economic expansion. They, therefore, experience wider-than-average fluctuations in product demand.

10 C is correct. Customers' flexibility as to when they purchase the product makes the product more sensitive to the business cycle.

11 C is correct. Varying conditions of recession or expansion around the world would affect the comparisons of companies with sales in different regions of the world.

12 B is correct. Constructing a peer group is a subjective process, and a logical starting point is to begin with a commercially available classification system. This system will identify a group of companies that may have properties comparable to the business activity of interest.

13 A is correct because it is a false statement. Reviewing the annual report to find management's discussion about the competitive environment and specific competitors is a suggested step in the process of constructing a peer group.

14 B is correct. The company could be in more than one peer group depending on the demand drivers for the business segments, although the multiple business segments may make it difficult to classify the company.

15 C is correct. For the automobile industry, the high capital requirements and other elements mentioned in the reading provide high barriers to entry, and recognition that auto factories are generally only of use for manufacturing cars implies a high barrier to exit.

16 C is correct. A slow pace of product innovation often means that customers prefer to stay with suppliers they know, implying stable market shares.

17 C is correct. Capacity increases in providing legal services would not involve several factors that would be important to the other two industries, including the need for substantial fixed capital investments or, in the case of a restaurant, outfitting rental or purchased space. These requirements would tend to slow down, respectively, steel production and restaurant expansion.

18 B is correct. Vision typically deteriorates at advanced ages. An increased number of older adults implies more eyewear products will be purchased.

19 B is correct. As their educational level increases, workers are able to perform more skilled tasks, earn higher wages, and as a result, have more income left for discretionary expenditures.

20 A is correct. Seeking economies of scale would tend to reduce per-unit costs and increase profit.

21 C is correct. The embryonic stage is characterized by slow growth and high prices.

22 C is correct. The growth phase is not likely to experience price wars because expanding industry demand provides companies the opportunity to grow even without increasing market share. When industry growth is stagnant, companies may only be able to grow by increasing market share, e.g., by engaging in price competition.

23 B is correct. The industry life-cycle model shows how demand evolves through time as an industry passes from the embryonic stage through the stage of decline.

24 A is correct. Industry consolidation and relatively high barriers to entry are two characteristics of a mature-stage industry.

25 C is correct. The relatively few members of the industry generally try to avoid price competition.

26 C is correct. With short lead times, industry capacity can be rapidly increased to satisfy demand, but it may also lead to overcapacity and lower profits.

27 A is correct. An industry that has high barriers to entry generally requires substantial physical capital and/or financial investment. With weak pricing power in the industry, finding a buyer for excess capacity (i.e., to exit the industry) may be difficult.

28 C is correct. Economic profit is earned and value created for shareholders when the company earns returns above the company's cost of capital.

29 B is correct. As displayed in Exhibit 4, the alcoholic beverage industry is concentrated and possesses strong pricing power.

30 A is correct. Companies with low cost strategies must be able to invest in productivity-improving equipment and finance that investment at a low cost of capital. Market share and pricing depend on whether the strategy is pursued defensively or offensively.

31 A is correct. The cost structure is an appropriate element when analyzing the supply of the product, but analysis of demand relies on the product's differentiating characteristics and the customers' needs and wants.

32 C is correct. The corporate profile would provide an understanding of these elements.

PRACTICE PROBLEMS

1 An analyst estimates the intrinsic value of a stock to be in the range of €17.85 to €21.45. The current market price of the stock is €24.35. This stock is *most likely*:

A overvalued.

B undervalued.

C fairly valued.

2 An analyst determines the intrinsic value of an equity security to be equal to $55. If the current price is $47, the equity is *most likely*:

A undervalued.

B fairly valued.

C overvalued.

3 In asset-based valuation models, the intrinsic value of a common share of stock is based on the:

A estimated market value of the company's assets.

B estimated market value of the company's assets plus liabilities.

C estimated market value of the company's assets minus liabilities.

4 Which of the following is *most likely* used in a present value model?

A Enterprise value.

B Price to free cash flow.

C Free cash flow to equity.

5 Book value is *least likely* to be considered when using:

A a multiplier model.

B an asset-based valuation model.

C a present value model.

6 An analyst is attempting to calculate the intrinsic value of a company and has gathered the following company data: EBITDA, total market value, and market value of cash and short-term investments, liabilities, and preferred shares. The analyst is *least likely* to use:

A a multiplier model.

B a discounted cash flow model.

C an asset-based valuation model.

7 An analyst who bases the calculation of intrinsic value on dividend-paying capacity rather than expected dividends will *most likely* use the:

A dividend discount model.

B free cash flow to equity model.

C cash flow from operations model.

8 An investor expects to purchase shares of common stock today and sell them after two years. The investor has estimated dividends for the next two years, D_1 and D_2, and the selling price of the stock two years from now, P_2. According to the dividend discount model, the intrinsic value of the stock today is the present value of:

A next year's dividend, D_1.

B future expected dividends, D_1 and D_2.

C future expected dividends and price—D_1, D_2 and P_2.

9 In the free cash flow to equity (FCFE) model, the intrinsic value of a share of stock is calculated as:

A the present value of future expected FCFE.

B the present value of future expected FCFE plus net borrowing.

C the present value of future expected FCFE minus fixed capital investment.

10 With respect to present value models, which of the following statements is *most accurate*?

A Present value models can be used only if a stock pays a dividend.

B Present value models can be used only if a stock pays a dividend or is expected to pay a dividend.

C Present value models can be used for stocks that currently pay a dividend, are expected to pay a dividend, or are not expected to pay a dividend.

11 A Canadian life insurance company has an issue of 4.80 percent, $25 par value, perpetual, non-convertible, non-callable preferred shares outstanding. The required rate of return on similar issues is 4.49 percent. The intrinsic value of a preferred share is *closest to*:

A $25.00.

B $26.75.

C $28.50.

12 Two analysts estimating the value of a non-convertible, non-callable, perpetual preferred stock with a constant dividend arrive at different estimated values. The *most likely* reason for the difference is that the analysts used different:

A time horizons.

B required rates of return.

C estimated dividend growth rates.

13 The Beasley Corporation has just paid a dividend of $1.75 per share. If the required rate of return is 12.3 percent per year and dividends are expected to grow indefinitely at a constant rate of 9.2 percent per year, the intrinsic value of Beasley Corporation stock is *closest* to:

A $15.54.

B $56.45.

C $61.65.

14 An investor is considering the purchase of a common stock with a $2.00 annual dividend. The dividend is expected to grow at a rate of 4 percent annually. If the investor's required rate of return is 7 percent, the intrinsic value of the stock is *closest* to:

A $50.00.

B $66.67.

C $69.33.

15 An analyst gathers or estimates the following information about a stock:

Current price per share	€22.56
Current annual dividend per share	€1.60
Annual dividend growth rate for Years 1–4	9.00%
Annual dividend growth rate for Years 5+	4.00%
Required rate of return	12%

Based on a dividend discount model, the stock is *most likely*:

A undervalued.

B fairly valued.

C overvalued.

16 An analyst is attempting to value shares of the Dominion Company. The company has just paid a dividend of \$0.58 per share. Dividends are expected to grow by 20 percent next year and 15 percent the year after that. From the third year onward, dividends are expected to grow at 5.6 percent per year indefinitely. If the required rate of return is 8.3 percent, the intrinsic value of the stock is *closest* to:

A \$26.00.

B \$27.00.

C \$28.00.

17 Hideki Corporation has just paid a dividend of ¥450 per share. Annual dividends are expected to grow at the rate of 4 percent per year over the next four years. At the end of four years, shares of Hideki Corporation are expected to sell for ¥9000. If the required rate of return is 12 percent, the intrinsic value of a share of Hideki Corporation is *closest* to:

A ¥5,850.

B ¥7,220.

C ¥7,670.

18 The Gordon growth model can be used to value dividend-paying companies that are:

A expected to grow very fast.

B in a mature phase of growth.

C very sensitive to the business cycle.

19 The best model to use when valuing a young dividend-paying company that is just entering the growth phase is *most likely* the:

A Gordon growth model.

B two-stage dividend discount model.

C three-stage dividend discount model.

20 An equity analyst has been asked to estimate the intrinsic value of the common stock of Omega Corporation, a leading manufacturer of automobile seats. Omega is in a mature industry, and both its earnings and dividends are expected to grow at a rate of 3 percent annually. Which of the following is *most likely* to be the best model for determining the intrinsic value of an Omega share?

A Gordon growth model.

B Free cash flow to equity model.

C Multistage dividend discount model.

21 A price earnings ratio that is derived from the Gordon growth model is inversely related to the:

A growth rate.

B dividend payout ratio.

C required rate of return.

22 The primary difference between P/E multiples based on comparables and P/E multiples based on fundamentals is that fundamentals-based P/Es take into account:

A future expectations.

B the law of one price.

C historical information.

23 An analyst makes the following statement: "Use of P/E and other multiples for analysis is not effective because the multiples are based on historical data and because not all companies have positive accounting earnings." The analyst's statement is *most likely*:

A inaccurate with respect to both historical data and earnings.

B accurate with respect to historical data and inaccurate with respect to earnings.

C inaccurate with respect to historical data and accurate with respect to earnings.

24 An analyst has prepared a table of the average trailing twelve-month price-to-earning (P/E), price-to-cash flow (P/CF), and price-to-sales (P/S) for the Tanaka Corporation for the years 2014 to 2017.

Year	P/E	P/CF	P/S
2014	4.9	5.4	1.2
2015	6.1	8.6	1.5
2016	8.3	7.3	1.9
2017	9.2	7.9	2.3

As of the date of the valuation in 2018, the trailing twelve-month P/E, P/CF, and P/S are, respectively, 9.2, 8.0, and 2.5. Based on the information provided, the analyst may reasonably conclude that Tanaka shares are *most likely*:

A overvalued.

B undervalued.

C fairly valued.

25 An analyst has gathered the following information for the Oudin Corporation:

Expected earnings per share = €5.70

Expected dividends per share = €2.70

Dividends are expected to grow at 2.75 percent per year indefinitely

The required rate of return is 8.35 percent

Based on the information provided, the price/earnings multiple for Oudin is *closest* to:

A 5.7.

B 8.5.

C 9.4.

26 An analyst gathers the following information about two companies:

	Alpha Corp.	Delta Co.
Current price per share	$57.32	$18.93
Last year's EPS	$3.82	$1.35
Current year's estimated EPS	$4.75	$1.40

Which of the following statements is *most accurate*?

A Delta has the higher trailing P/E multiple and lower current estimated P/E multiple.

B Alpha has the higher trailing P/E multiple and lower current estimated P/E multiple.

C Alpha has the higher trailing P/E multiple and higher current estimated P/E multiple.

27 An analyst gathers the following information about similar companies in the banking sector:

	First Bank	Prime Bank	Pioneer Trust
P/B	1.10	0.60	0.60
P/E	8.40	11.10	8.30

Which of the companies is *most likely* to be undervalued?

A First Bank.

B Prime Bank.

C Pioneer Trust.

28 The market value of equity for a company can be calculated as enterprise value:

A minus market value of debt, preferred stock, and short-term investments.

B plus market value of debt and preferred stock minus short-term investments.

C minus market value of debt and preferred stock plus short-term investments.

29 Which of the following statements regarding the calculation of the enterprise value multiple is *most likely* correct?

A Operating income may be used instead of EBITDA.

B EBITDA may not be used if company earnings are negative.

C Book value of debt may be used instead of market value of debt.

30 An analyst has determined that the appropriate EV/EBITDA for Rainbow Company is 10.2. The analyst has also collected the following forecasted information for Rainbow Company:

EBITDA = $22,000,000

Market value of debt = $56,000,000

Cash = $1,500,000

The value of equity for Rainbow Company is *closest* to:

A $169 million.

B $224 million.

C $281 million.

31 Enterprise value is most often determined as market capitalization of common equity and preferred stock minus the value of cash equivalents plus the:

A book value of debt.

B market value of debt.

C market value of long-term debt.

32 Asset-based valuation models are best suited to companies where the capital structure does not have a high proportion of:

A debt.

B intangible assets.

C current assets and liabilities.

33 Which of the following is *most likely* a reason for using asset-based valuation?

A The analyst is valuing a privately held company.

B The company has a relatively high level of intangible assets.

C The market values of assets and liabilities are different from the balance sheet values.

34 A disadvantage of the EV method for valuing equity is that the following information may be difficult to obtain:

A Operating income.

B Market value of debt.

C Market value of equity.

35 Which type of equity valuation model is *most likely* to be preferable when one is comparing similar companies?

A A multiplier model.

B A present value model.

C An asset-based valuation model.

36 Which of the following is *most likely* considered a weakness of present value models?

A Present value models cannot be used for companies that do not pay dividends.

B Small changes in model assumptions and inputs can result in large changes in the computed intrinsic value of the security.

C The value of the security depends on the investor's holding period; thus, comparing valuations of different companies for different investors is difficult.

SOLUTIONS

1 A is correct. The current market price of the stock exceeds the upper bound of the analyst's estimate of the intrinsic value of the stock.

2 A is correct. The market price is less than the estimated intrinsic, or fundamental, value.

3 C is correct. Asset-based valuation models calculate the intrinsic value of equity by subtracting liabilities from the market value of assets.

4 C is correct. FCFE can be used in a form of present value, or discounted cash flow, model. Both EV and price to free cash flow are forms of multiplier models.

5 C is correct. Multiplier valuation models (in the form of P/B) and asset-based valuation models (in the form of adjustments to book value) use book value, whereas present value models typically discount future expected cash flows.

6 B is correct. To use a discounted cash flow model, the analyst will require FCFE or dividend data. In addition, the analyst will need data to calculate an appropriate discount rate.

7 B is correct. The FCFE model assumes that dividend-paying capacity is reflected in FCFE.

8 C is correct. According to the dividend discount model, the intrinsic value of a stock today is the present value of all future dividends. In this case, the intrinsic value is the present value of D_1, D_2, and P_2. Note that P_2 is the present value at Period 2 of all future dividends from Period 3 to infinity.

9 A is correct. In the FCFE model, the intrinsic value of stock is calculated by discounting expected future FCFE to present value. No further adjustments are required.

10 C is correct. Dividend discount models can be used for a stock that pays a current dividend or a stock that is expected to pay a dividend. FCFE can be used for both of those stocks and for stocks that do not, or are not expected to, pay dividends in the near future. Both of these models are forms of present value models.

11 B is correct. The expected annual dividend is 4.80% × \$25 = \$1.20. The value of a preferred share is \$1.20/0.0449 = \$26.73.

12 B is correct. The required rate of return, r, can vary widely depending on the inputs and is not unique. A preferred stock with a constant dividend would not have a growth rate to estimate, and the investor's time horizon would have no effect on the calculation of intrinsic value.

13 C is correct. $P_0 = D_1/(r - g) = 1.75(1.092)/(0.123 - 0.092) = \$61.65$.

14 C is correct. According to the Gordon growth model, $V_0 = D_1/(r - g)$. In this case, $D_1 = \$2.00 \times 1.04 = \$2.08$, so $V_0 = \$2.08/(0.07 - 0.04) = \$69.3333 = \$69.33$.

15 A is correct. The current price of €22.56 is less than the intrinsic value (V_0) of €24.64; therefore, the stock appears to be currently undervalued. According to the two-stage dividend discount model:

$$V_0 = \sum_{t=1}^{n} \frac{D_0\left(1 + g_S\right)^t}{\left(1 + r\right)^t} + \frac{V_n}{\left(1 + r\right)^n} \text{ and } V_n = \frac{D_{n+1}}{r - g_L}$$

$$D_{n+1} = D_0(1 + g_S)^n(1 + g_L)$$
$$D_1 = €1.60 \times 1.09 = €1.744$$

D_2 = €1.60 × $(1.09)^2$ = €1.901
D_3 = €1.60 × $(1.09)^3$ = €2.072
D_4 = €1.60 × $(1.09)^4$ = €2.259
D_5 = [€1.60 × $(1.09)^4$](1.04) = €2.349
V_4 = €2.349/(0.12 – 0.04) = €29.363

$$V_0 = \frac{1.744}{(1.12)^1} + \frac{1.901}{(1.12)^2} + \frac{2.072}{(1.12)^3} + \frac{2.259}{(1.12)^4} + \frac{29.363}{(1.12)^4}$$

= 1.557 + 1.515 + 1.475 + 1.436 + 18.661
= €24.64 (which is greater than the current price of €22.56)

16 C is correct.

$$\begin{aligned} V_0 &= \frac{D_1}{(1+r)} + \frac{D_2}{(1+r)^2} + \frac{P_2}{(1+r)^2} \\ &= \frac{0.70}{(1.083)} + \frac{0.80}{(1.083)^2} + \frac{31.29}{(1.083)^2} \\ &= \$28.01 \end{aligned}$$

Note that D_1 = 0.58(1.20) = 0.70, D_2 = 0.58(1.20)(1.15) = 0.80, and $P_2 = D_3/(k - g)$ = 0.80(1.056)/(0.083 – 0.056) = 31.29

17 B is correct.

$$\begin{aligned} V_0 &= \frac{D_1}{(1+r)} + \frac{D_2}{(1+r)^2} + \frac{D_3}{(1+r)^3} + \frac{D_4}{(1+r)^4} + \frac{P_4}{(1+r)^4} \\ &= \frac{468}{(1.12)} + \frac{486.72}{(1.12)^2} + \frac{506.19}{(1.12)^3} + \frac{526.44}{(1.12)^4} + \frac{9000}{(1.12)^4} \\ &= ¥7,220 \end{aligned}$$

18 B is correct. The Gordon growth model (also known as the constant growth model) can be used to value dividend-paying companies in a mature phase of growth. A stable dividend growth rate is often a plausible assumption for such companies.

19 C is correct. The Gordon growth model is best suited to valuing mature companies. The two-stage model is best for companies that are transitioning from a growth stage to a mature stage. The three-stage model is appropriate for young companies just entering the growth phase.

20 A is correct. The company is a mature company with a steadily growing dividend rate. The two-stage (or multistage) model is unnecessary because the dividend growth rate is expected to remain stable. Although an FCFE model could be used, that model is more often chosen for companies that currently pay no dividends.

21 C is correct. The justified forward P/E is calculated as follows:

$$\frac{P_0}{E_1} = \frac{\dfrac{D_1}{E_1}}{r - g}$$

P/E is inversely related to the required rate of return, r, and directly related to the growth rate, g, and the dividend payout ratio, D/E.

22 A is correct. Multiples based on comparables are grounded in the law of one price and take into account historical multiple values. In contrast, P/E multiples based on fundamentals can be based on the Gordon growth model, which takes into account future expected dividends.

23 A is correct. The statement is inaccurate in both respects. Although multiples can be calculated from historical data, forecasted values can be used as well. For companies without accounting earnings, several other multiples can be used. These multiples are often specific to a company's industry or sector and include price-to-sales and price-to-cash flow.

24 A is correct. Tanaka shares are most likely overvalued. As the table below shows, all the 2018 multiples are currently above their 2014–2017 averages.

Year	P/E	P/CF	P/R
2014	4.9	5.4	1.2
2015	6.1	8.6	1.5
2016	8.3	7.3	1.9
2017	9.2	7.9	2.3
Average	7.1	7.3	1.7

25 B is correct.

$$\frac{P_0}{E_1} = \frac{\frac{D_1}{E_1}}{r - g} = \frac{\frac{2.7}{5.7}}{0.0835 - 0.0275} = 8.5$$

26 B is correct. P/E = Current price/EPS, and Estimated P/E = Current price/ Estimated EPS.

Alpha P/E = \$57.32/\$3.82 = 15.01

Alpha estimated P/E = \$57.32/4.75 = 12.07

Delta P/E = \$18.93/\$1.35 = 14.02

Delta estimated P/E = \$18.93/\$1.40 = 13.52

27 C is correct. Relative to the others, Pioneer Trust has the lowest P/E multiple and the P/B multiple is tied for the lowest with Prime Bank. Given the law of one price, similar companies should trade at similar P/B and P/E levels. Thus, based on the information presented, Pioneer is most likely to be undervalued.

28 C is correct. Enterprise value is calculated as the market value of equity plus the market value of debt and preferred stock minus short-term investments. Therefore, the market value of equity is enterprise value minus the market value of debt and preferred stock plus short-term investments.

29 A is correct. Operating income may be used in place of EBITDA when calculating the enterprise value multiple. EBITDA may be used when company earnings are negative because EBITDA is usually positive. The book value of debt cannot be used in place of market value of debt.

30 A is correct.

$$\text{EV} = 10.2 \times 22{,}000{,}000 = \$224{,}400{,}000$$

$$\begin{aligned}\text{Equity value} &= \text{EV} - \text{Debt} + \text{Cash}\\ &= 224{,}400{,}000 - 56{,}000{,}000 + 1{,}500{,}000\\ &= \$169{,}900{,}000\end{aligned}$$

31 B is correct. The market value of debt must be calculated and taken out of the enterprise value. Enterprise value, sometimes known as the cost of a takeover, is the cost of the purchase of the company, which would include the assumption of the company's debts at market value.

32 B is correct. Intangible assets are hard to value. Therefore, asset-based valuation models work best for companies that do not have a high proportion of intangible assets.

33 A is correct. Asset-based valuations are most often used when an analyst is valuing private enterprises. Both B and C are considerations in asset-based valuations but are more likely to be reasons to avoid that valuation model rather than reasons to use it.

34 B is correct. According to the reading, analysts may have not have access to market quotations for company debt.

35 A is correct. Although all models can be used to compare various companies, multiplier models have the advantage of reducing varying fundamental data points into a format that allows direct comparisons. As long as the analyst applies the data in a consistent manner for all the companies, this approach provides useful comparative data.

36 B is correct. Very small changes in inputs, such as required rate of return or dividend growth rate, can result in large changes to the valuation model output. Some present value models, such as FCFE models, can be used to value companies without dividends. Also, the intrinsic value of a security is independent of the investor's holding period.