Student name:\_\_\_\_\_\_\_\_\_\_

**MULTIPLE CHOICE - Choose the one alternative that best completes the statement or answers the question.  
1)** Portfolios that plot on the security market line in equilibrium:

1) \_\_\_\_\_\_

A) have only systematic (beta) risk.   
 B) may be concentrated in only a few stocks.  
 C) must be well diversified.

**2)** Which of the following statements regarding the covariance of rates of return is *least* accurate?

2) \_\_\_\_\_\_

A) Covariance is positive if two variables tend to both be above their mean values in the same time periods.   
 B) Covariance is not a very useful measure of the strength of the relationship between rates of return.  
 C) If the covariance is negative, the rates of return on two investments will always move in different directions relative to their means.

**3)** All portfolios on the capital market line:

3) \_\_\_\_\_\_

A) contain different risky assets.   
 B) are perfectly positively correlated.  
 C) are unrelated except that they all contain the risk-free asset.

**4)** Which of the following statements about active and passive asset management is *most accurate*?

4) \_\_\_\_\_\_

A) Active management may use fundamental analysis, technical analysis, or a “smart beta” approach to outperform a chosen benchmark.   
 B) Active management has been gaining market share over time versus passive management.  
 C) Passive management’s share of industry revenues is smaller than its share of assets under management.

**5)** When comparing portfolios that plot on the security market line (SML) to those that plot on the capital market line (CML), a financial analyst would *most accurately* state that portfolios that lie on the SML:

5) \_\_\_\_\_\_

A) have only systematic risk, while portfolios on the CML have both systematic and unsystematic risk.   
 B) are not necessarily well diversified, while portfolios on the CML are well diversified.  
 C) are not necessarily priced at their equilibrium values, while portfolios on the CML are priced at their equilibrium values.

**6)** An investor with a buy-and-hold strategy who makes quarterly deposits into an account should *most appropriately* evaluate portfolio performance using the portfolio’s:

6) \_\_\_\_\_\_

A) money-weighted return.   
 B) geometric mean return.  
 C) arithmetic mean return.

**7)** Three portfolios have the following expected returns and risk:

|  |  |  |
| --- | --- | --- |
| **Portfolio** | **Expected return** | **Standard deviation** |
| **Jones** | 4% | 2% |
| **Kelly** | 6% | 5% |
| **Lewis** | 7% | 8% |

A risk-averse investor choosing from these portfolios could rationally select:

7) \_\_\_\_\_\_

A) Jones or Kelly, but not Lewis.   
 B) Jones, but not Kelly or Lewis.  
 C) any of these portfolios.

**8)** An investor buys one share of stock for $100. At the end of year one she buys three more shares at $89 per share. At the end of year two she sells all four shares for $98 each. The stock paid a dividend of $1.00 per share at the end of year one and year two. What is the investor’s time-weighted rate of return?

8) \_\_\_\_\_\_

A) 6.35%.   
 B) 0.06%.  
 C) 11.24%.

**9)** Charlie Smith holds two portfolios, Portfolio X and Portfolio Y. They are both liquid, well-diversified portfolios with approximately equal market values. He expects Portfolio X to return 13% and Portfolio Y to return 14% over the upcoming year. Because of an unexpected need for cash, Smith is forced to sell at least one of the portfolios. He uses the security market line to determine whether his portfolios are undervalued or overvalued. Portfolio X's beta is 0.9 and Portfolio Y's beta is 1.1. The expected return on the market is 12% and the risk-free rate is 5%. Smith should sell:

9) \_\_\_\_\_\_

A) either portfolio X or Y because they are both properly valued.   
 B) portfolio Y only.  
 C) both portfolios X and Y because they are both overvalued.

**10)** When the market is in equilibrium, all:

10) \_\_\_\_\_\_

A) assets plot on the CML.   
 B) investors hold the market portfolio.  
 C) assets plot on the SML.

**11)** In equilibrium, an inefficient portfolio will plot:

11) \_\_\_\_\_\_

A) on the CML and below the SML.   
 B) below the CML and below the SML.  
 C) below the CML and on the SML.

**12)** According to the capital asset pricing model (CAPM):

12) \_\_\_\_\_\_

A) a stock with high risk, measured as standard deviation of returns, will have high expected returns in equilibrium.   
 B) an investor who is risk averse should hold at least some of the risk-free asset in his portfolio.  
 C) all investors who take on risk will hold the same risky-asset portfolio.

**13)** On January 1, Jonathan Wood invests $50,000. At the end of March, his investment is worth $51,000. On April 1, Wood deposits $10,000 into his account, and by the end of June, his account is worth $60,000. Wood withdraws $30,000 on July 1 and makes no additional deposits or withdrawals the rest of the year. By the end of the year, his account is worth $33,000. The time-weighted return for the year is *closest to*:

13) \_\_\_\_\_\_

A) 5.5%.   
 B) 7.0%.  
 C) 10.4%.

**14)** Which of the following statements about the efficient frontier is *least accurate*?

14) \_\_\_\_\_\_

A) The efficient frontier shows the relationship that exists between expected return and total risk in the absence of a risk-free asset.   
 B) Portfolios falling on the efficient frontier are fully diversified.  
 C) Investors will want to invest in the portfolio on the efficient frontier that offers the highest rate of return.

**15)** A model that estimates expected excess return on a security based on the ratio of the firm’s book value to its market value is *best* described as a:

15) \_\_\_\_\_\_

A) single-factor model.   
 B) multifactor model.  
 C) market model.

**16)** A portfolio’s excess return per unit of systematic risk is known as its:

16) \_\_\_\_\_\_

A) Treynor measure.   
 B) Jensen’s alpha.  
 C) Sharpe ratio.

**17)** An analyst wants to determine whether Dover Holdings is overvalued or undervalued, and by how much (expressed as percentage return). The analyst gathers the following information on the stock:  
 ● Market standard deviation = 0.70  
 ● Covariance of Dover with the market = 0.85  
 ● Dover’s current stock price (P0) = $35.00  
 ● The expected price in one year (P1) is $39.00  
 ● Expected annual dividend = $1.50  
 ● 3-month Treasury bill yield = 4.50%.  
 ● Historical average S&P 500 return = 12.0%.  
   
 Dover Holdings stock is:

17) \_\_\_\_\_\_

A) overvalued by approximately 1.8%.   
 B) undervalued by approximately 2.1%.  
 C) undervalued by approximately 1.8%.

**18)** Which of the following is the *most accurate* description of the market portfolio in Capital Market Theory? The market portfolio consists of all:

18) \_\_\_\_\_\_

A) risky assets in existence.   
 B) risky and risk-free assets in existence.  
 C) equity securities in existence.

**19)** Which of the following is *least likely* considered a source of systematic risk for bonds?

19) \_\_\_\_\_\_

A) Market risk.   
 B) Purchasing power risk.  
 C) Default risk.

**20)** A stock's abnormal rate of return is defined as the:

20) \_\_\_\_\_\_

A) expected risk-adjusted rate of return minus the market rate of return.   
 B) actual rate of return less the expected risk-adjusted rate of return.  
 C) rate of return during abnormal price movements.

**21)** Kendra Jackson, CFA, is given the following information on two stocks, Rockaway and Bridgeport.  
   
 ● Covariance between the two stocks = 0.0325  
 ● Standard Deviation of Rockaway’s returns = 0.25  
 ● Standard Deviation of Bridgeport’s returns = 0.13  
   
 Assuming that Jackson must construct a portfolio using only these two stocks, which of the following combinations will result in the *minimum* variance portfolio?

21) \_\_\_\_\_\_

A) 80% in Bridgeport, 20% in Rockaway.   
 B) 50% in Bridgeport, 50% in Rockaway.  
 C) 100% in Bridgeport.

**22)** Which of the following statements *best* describes an investment that is not on the efficient frontier?

22) \_\_\_\_\_\_

A) The portfolio has a very high return.   
 B) There is a portfolio that has a lower return for the same risk.  
 C) There is a portfolio that has a lower risk for the same return.

**23)** According to the CAPM, a rational investor would be *least likely* to choose as his optimal portfolio:

23) \_\_\_\_\_\_

A) a 100% allocation to the risk-free asset.   
 B) a 130% allocation to the market portfolio.  
 C) the global minimum variance portfolio.

**24)** James Franklin, CFA, has high risk tolerance and seeks high returns. Based on capital market theory, Franklin would *most appropriately* hold:

24) \_\_\_\_\_\_

A) the market portfolio as his only risky asset.   
 B) a high risk biotech stock, as it will have high expected returns in equilibrium.  
 C) a high-beta portfolio of risky assets financed in part by borrowing at the risk-free rate.

**25)** All portfolios that lie on the capital market line:

25) \_\_\_\_\_\_

A) contain at least some positive allocation to the risk-free asset.   
 B) contain the same mix of risky assets unless only the risk-free asset is held.  
 C) have some unsystematic risk unless only the risk-free asset is held.

**26)** Which of the following pooled investment shares is *least likely* to trade at a price different from its NAV?

26) \_\_\_\_\_\_

A) Exchange-traded fund shares.   
 B) Closed-end mutual fund shares.  
 C) Open-end mutual fund shares.

**27)** Smith has more steeply sloped risk-return indifference curves than Jones. Assuming these investors have the same expectations, which of the following *best* describes their risk preferences and the characteristics of their optimal portfolios? Smith is:

27) \_\_\_\_\_\_

A) less risk averse than Jones and will choose an optimal portfolio with a lower expected return.   
 B) more risk averse than Jones and will choose an optimal portfolio with a higher expected return.  
 C) more risk averse than Jones and will choose an optimal portfolio with a lower expected return.

**28)** When a risk-free asset is combined with a portfolio of risky assets, which of the following is *least accurate*?

28) \_\_\_\_\_\_

A) The standard deviation of the return for the newly created portfolio is the standard deviation of the returns of the risky asset portfolio multiplied by its portfolio weight.   
 B) The variance of the resulting portfolio is a weighted average of the returns variances of the risk-free asset and of the portfolio of risky assets.  
 C) The expected return for the newly created portfolio is the weighted average of the return on the risk-free asset and the expected return on the risky asset portfolio.

**29)** An investor buys a non-dividend paying stock for $100 at the beginning of the year with 50% initial margin. At the end of the year, the stock price is $95. Deflation of 2% occurred during the year. Which of the following return measures for this investment will be greatest?

29) \_\_\_\_\_\_

A) Leveraged return.   
 B) Real return.  
 C) Nominal return.

**30)** Which of the following is *not* necessarily included in an investment policy statement?

30) \_\_\_\_\_\_

A) A benchmark against which to judge performance.   
 B) An investment strategy based on the investor’s objectives and constraints.  
 C) Procedures to update the IPS when circumstances change.

**31)** A head and shoulders pattern is *most likely* to precede a reversal in trend if:

31) \_\_\_\_\_\_

A) volume decreases between the left shoulder and the head, then increases between the head and the right shoulder.   
 B) the left shoulder, the head, and the right shoulder occur on increasing volume.  
 C) the left shoulder, the head, and the right shoulder occur on decreasing volume.

**32)** Which of the following uses of data is *most accurately* described as curation?

32) \_\_\_\_\_\_

A) An analyst adjusts daily stock index data from two countries for their different market holidays.   
 B) A data technician accesses an offsite archive to retrieve data that has been stored there.  
 C) An investor creates a word cloud from financial analysts’ recent research reports about a company.

**33)** The advantages of using technical analysis include:

33) \_\_\_\_\_\_

A) the incorporation of psychological reasons behind price changes.   
 B) complete objectivity.  
 C) ease in interpreting reasons behind stock price trends.

**34)** While assessing an investor’s risk tolerance, a financial adviser is *least likely* to ask which of the following questions?

34) \_\_\_\_\_\_

A) “What rate of investment return do you expect?”   
 B) “Is your home life stable?”  
 C) “How much insurance coverage do you have?”

**35)** A government decides it will privatize vehicle registrations if the province’s auto insurance companies can record and maintain ownership titles using distributed ledger technology. This application of distributed ledger technology is *best* characterized as:

35) \_\_\_\_\_\_

A) blockchain.   
 B) tokenization.  
 C) smart contracts.

**36)** The resistance level signifies the price at which a stock's supply would be expected to:

36) \_\_\_\_\_\_

A) cause the stock price to "break out".   
 B) increase substantially.  
 C) decrease substantially.

**37)** When performing strategic asset allocation, properly defined and specified asset classes should:

37) \_\_\_\_\_\_

A) each contain assets that have a broad range of risk and expected return.   
 B) have high returns correlations with other asset classes.  
 C) approximate the investor's total investable universe as a group.

**38)** An endowment is required by statute to pay out a minimum percentage of its asset value each period to its beneficiaries. This investment constraint is *best* classified as:

38) \_\_\_\_\_\_

A) unique circumstances.   
 B) liquidity.  
 C) legal and regulatory.

**39)** The manager of the Fullen Balanced Fund is putting together a report that breaks out the percentage of the variation in portfolio return that is explained by the target asset allocation, security selection, and tactical variations from the target, respectively. Which of the following sets of numbers was the *most likely* conclusion for the report?

39) \_\_\_\_\_\_

A) 33%, 33%, 33%.   
 B) 50%, 25%, 25%.  
 C) 90%, 6%, 4%.

**40)** Based on a questionnaire about investment risk, an advisor concludes that an investor’s risk tolerance is high, but based on an analysis of the client's income needs and time horizon, he concludes the investor's risk tolerance is low. The *most appropriate* action for the advisor is to:

40) \_\_\_\_\_\_

A) educate the client about investment risk and re-administer the questionnaire.   
 B) emphasize bonds over stocks.  
 C) emphasize stocks over bonds.

**Answer Key**Test name: Portfolio Management

1) B

All portfolios plot on the SML in equilibrium according to the capital asset pricing model.

2) C

Negative covariance means rates of return for one security will tend to be above its mean return in periods when the other is below its mean return, and vice versa. Positive covariance means that returns on both securities will tend to be above (or below) their mean returns in the same time periods. For the returns to *always* move in opposite directions, they would have to be perfectly negatively correlated.   
   
 Negative covariance by itself does not imply anything about the strength of the negative correlation, it must be standardized by dividing by the product of the securities’ standard deviations of return.

3) B

The introduction of a risk-free asset changes the Markowitz efficient frontier into a straight line. This straight efficient frontier line is called the capital market line (CML). Since the line is straight, the math implies that the returns on any two portfolios on this line will be perfectly, positively correlated with each other. Note: When ra,b = 1, then the equation for risk changes to sport = WAsA + WBsB, which is a straight line. The risky assets for each portfolio on the CML are the same, the tangency (or market) portfolio of risky assets.

4) C

Because fees for passive management are lower than fees for active management, passive management represents a smaller share of industry revenues than assets under management. Passive management has been gaining market share over time versus active management. Smart beta is a passive management strategy that focuses on a specific market risk factor.

5) B

Although the risk measure on the capital market line diagram is total risk, all portfolios that lie on the CML are well diversified and have only systematic risk. This is because portfolios on the CML are all constructed from the risk-free asset and the (well-diversified) market portfolio. Any portfolio, including single securities, will plot along the SML in equilibrium. Their unsystematic risk can be significant, but it is not measured on the SML diagram because unsystematic risk is not related to expected return. Both the CML and the SML reflect relations that hold when prices are in equilibrium.

6) B

Geometric mean return (time-weighted return) is the most appropriate method for performance measurement as it does not consider additions to or withdrawals from the account.

7) C

Risk aversion means that to accept greater risk, an investor must be compensated with a higher expected return. For the three portfolios given, higher risk is associated with higher expected return. Therefore a risk-averse investor may select any of these portfolios. A risk-averse investor will not select a portfolio if another portfolio offers a higher expected return with the same risk, or lower risk with the same expected return.

8) B

The holding period return in year one is ($89.00 − $100.00 + $1.00) / $100.00 = −10.00%. The holding period return in year two is ($98.00 − $89.00 + $1.00) / $89 = 11.24%.  
   
 The time-weighted return is [{1 + (−0.1000)}{1 + 0.1124}]1/2 − 1 = 0.06%.

9) B

Portfolio X’s required return is 0.05 + 0.9 × (0.12 − 0.05) = 11.3%. It is expected to return 13%. The portfolio has an expected excess return of 1.7%   
   
 Portfolio Y’s required return is 0.05 + 1.1 × (0.12 − 0.05) = 12.7%. It is expected to return 14%. The portfolio has an expected excess return of 1.3%.   
   
 Since both portfolios are undervalued, the investor should sell the portfolio that offers less excess return. Sell Portfolio Y because its excess return is less than that of Portfolio X.

10) C

When the market is in equilibrium, expected returns equal required returns. Since this means that all assets are correctly priced, all assets plot on the SML.  
   
 By definition, all stocks and portfolios other than the market portfolio fall *below* the CML. (Only the market portfolio is efficient).

11) C

An inefficient portfolio will plot below the CML. In equilibrium, all portfolios will plot on the SML.

12) C

One of the assumptions of the CAPM is that all investors who hold risky assets will hold the same portfolio of risky assets (the market portfolio). Risk aversion means an investor will accept more risk only if compensated with a higher expected return. In capital market theory, all investors exhibit risk aversion, even an investor who is short the risk-free asset. In the CAPM, a stock’s risk is measured as its beta, not its standard deviation of returns.

13) C

January − March return = 51,000 / 50,000 − 1 = 2.00%  
 April − June return = 60,000 / (51,000 + 10,000) − 1 = −1.64%  
 July − December return = 33,000 / (60,000 − 30,000) − 1 = 10.00%  
 Time-weighted return = [(1 + 0.02)(1 − 0.0164)(1 + 0.10)] − 1 = 0.1036 or 10.36%

14) C

The optimal portfolio for each investor is the *highest indifference curve that is tangent to the efficient frontier*.

15) A

A model that estimates a stock’s expected excess return based only on the book-to-market ratio is a single-factor model. The market model is a single-factor model that estimates expected excess return based on a security’s sensitivity to the expected excess return of the market portfolio. A multifactor model would estimate expected excess return based on more than one factor.

16) A

The Treynor measure is excess return relative to beta. The Sharpe ratio measures excess return relative to standard deviation. Jensen’s alpha measures a portfolio’s excess return relative to return of a portfolio on the SML that has the same beta.

17) A

To determine whether a stock is overvalued or undervalued, we need to compare the expected return (or holding period return) and the required return (from Capital Asset Pricing Model, or CAPM).   
   
 *Step 1: Calculate Expected Return (Holding period return)*   
   
 The formula for the (one-year) holding period return is:   
   
 HPR = (D1 + S1 − S0) / S0, where D = dividend and S = stock price.   
   
 Here, HPR = (1.50 + 39 − 35) / 35 = 15.71%   
   
 *Step 2: Calculate Required Return*   
   
 The formula for the required return is from the CAPM: RR = Rf + (ERM − Rf) × Beta   
   
 Here, we are given the information we need except for Beta. Remember that Beta can be calculated with: Betastock = [covS,M] / [σ2M].   
   
 Here we are given the numerator and the denominator, so the calculation is: 0.85 / 0.702 = 1.73. RR = 4.50% + (12.0 − 4.50%) × 1.73 = 17.48%.   
   
 *Step 3: Determine over/under valuation*   
   
 The required return is greater than the expected return, so the security is overvalued.   
   
 The amount = 17.48% − 15.71% = 1.77%.

18) A

The market portfolio, in theory, contains all risky assets in existence. It does not contain any risk-free assets.

19) C

Default risk is based on company-specific or unsystematic risk.

20) B

Abnormal return = Actual return − expected risk-adjusted return

21) C

First, calculate the correlation coefficient to check whether diversification will provide any benefit.   
 rBridgeport, Rockaway = covBridgeport, Rockaway / [( σBridgeport) × (σRockaway)] = 0.0325 / (0.13 × 0.25) = 1.00  
   
 Since the stocks are perfectly positively correlated, there are no diversification benefits and we select the stock with the lowest risk (as measured by variance or standard deviation), which is Bridgeport.

22) C

The efficient frontier outlines the set of portfolios that gives investors the highest return for a given level of risk or the lowest risk for a given level of return. Therefore, if a portfolio is not on the efficient frontier, there must be a portfolio that has lower risk for the same return. Equivalently, there must be a portfolio that produces a higher return for the same risk.

23) C

According to the CAPM, rational, risk-averse investors will optimally choose to hold a portfolio along the capital market line. This can range from a 100% allocation to the risk-free asset to a leveraged position in the market portfolio constructed by borrowing at the risk-free rate to invest more than 100% of the portfolio equity value in the market portfolio. The global minimum variance portfolio lies below the CML and is not an efficient portfolio under the assumptions of the CAPM.

24) A

According to capital market theory, all investors will choose a combination of the market portfolio and borrowing or lending at the risk-free rate; that is, a portfolio on the CML.   
   
 (Study Session 18, Module 53.1, LOS 53.a)

25) B

All portfolios on the CML include the same tangency portfolio of risky assets, except the intercept (all invested in risk-free asset). The tangency portfolio contains none of the risk-free asset and “borrowing portfolios” can be constructed with a negative allocation to the risk-free asset. Portfolios on the CML are efficient (well-diversified) and have no unsystematic risk.   
   
 (Study Session 18, Module 53.1, LOS 53.b, 53.c)

26) C

Shares of open-end mutual funds trade at NAV. The others may deviate from NAV.

27) C

Steeply sloped risk-return indifference curves indicate that a greater increase in expected return is required as compensation for assuming an additional unit of risk, compared to less-steep indifference curves. The more risk-averse Smith will choose an optimal portfolio with lower risk and a lower expected return than the less risk-averse Jones's optimal portfolio.

28) B

This statement is not correct; the standard deviation of returns for the resulting portfolio is a weighted average of the returns standard deviation of the risk-free asset (zero) and the returns standard deviation of the risky-asset portfolio.

29) B

No calculations are needed. The real return is greater than the nominal return because the inflation rate is negative. The leveraged return is more negative than the nominal return because the investment lost value and leverage magnifies the loss.

30) C

At a minimum an IPS should contain a clear statement of client circumstances and constraints, an investment strategy based on these, and some benchmark against which to evaluate the account performance. The investment must periodically update the IPS as circumstances change, but explicit procedures for these updates are not necessarily included in the IPS itself.

31) C

Decreasing volume on each of the high prices in a head and shoulders pattern (or each of the low prices in an inverse head and shoulders) suggests weakening in the supply and demand forces that were driving the price trend.

32) A

Curation is ensuring the quality of data—for example, by adjusting for bad or missing data. Word clouds are a visualization technique. Moving data from a storage medium to where they are needed is referred to as transfer.

33) A

Technical analysis avoids having to use fundamental data and adjusting for accounting problems, incorporates psychological as well as economic reasons behind price changes, and tells WHEN to buy; not WHY investors are buying. Drawbacks include subjective interpretation of charts and graphs.

34) A

While the degree of risk tolerance will have an affect on expected returns, assessing the risk tolerance comes first, and the resulting set of feasible returns follows. The other questions address risk tolerance.

35) B

Tokenization refers to maintaining ownership records for physical assets on a distributed ledger. This might, but would not necessarily, use a blockchain, which is a subcategory of distributed ledgers. Smart contracts are computerized agreements designed to automatically carry out certain actions if defined conditions are met.

36) B

*Support and resistance levels*. Most stock prices remain relatively stable and fluctuate up and down from their true value. The lower limit to these fluctuations is called a *support level* – the price range where a stock appears cheap and attracts buyers. The upper limit is called a *resistance level* – the price range where a stock appears expensive and initiates selling.   
   
 Generally, a resistance level tends to develop after a stock has experienced a steady decline from a higher price level. Technicians believe that the decline in price will cause some investors who acquired the stock at a higher price to look for an opportunity to sell it near their break-even points. Therefore, the supply of stock owned by investors is overhanging the market. When the price rebounds to the target price set by these investors, this overhanging supply of stock comes to the market and dramatically reverses the price increase on heavy volume.

37) C

When taken together, the asset classes should approximate the investor's total investible universe. Properly defined and specified asset classes should each have a low return correlation to the other asset classes, and within each asset class should be assets that have similar expected risk and return.

38) C

Legal and regulatory constraints are those that apply to an investor by law.

39) C

Several studies support the idea that approximately 90% of the variation in a single portfolio’s returns can be explained by its target asset allocations, with security selection and tactical variations from the target (market timing) playing a much less significant role. In fact, for actively managed funds, actual portfolio returns are slightly less than those that would have been achieved if the manager strictly maintained the target allocation, thus illustrating the difficultly of improving returns through security selection or market timing.

40) B

When determining an investor's risk tolerance, an advisor must consider both the investor's ability and willingness to bear risk. Even though the investor has a high willingness to bear risk, his ability to take risk (based on his financial situation) is low, and this should take precedence. A portfolio that emphasizes bonds over stocks has less investment risk and is the most appropriate choice.