

SAMPLE EXAM QUESTIONS
Finance 34600 – Investment Theory
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MULTIPLE CHOICE:

Lecture 1 – Securities Markets and Trading

1. Portfolio construction that begins with selection of broad asset classes and then moves to individual security selection is referred to as:
 - a) Bottom-up
 - b) Top-down
 - c) Technical Analysis
 - d) Fundamental Analysis
2. A 20-year municipal bond has a yield of 6.5%. What yield on a comparable taxable bond would make an investor in the 28% tax bracket indifferent between the two investments?
 - a) 9.03%
 - b) 5.60%
 - c) 10.21%
 - d) 4.68%
3. Which of the following is equivalent to a buy and hold return on a portfolio which invests in an equal number of shares of each stock?
 - a) The return on an Equally-weighted index
 - b) The return on a Price-weighted index
 - c) The return on a Geometrically-weighted index
 - d) The return on a Value-weighted index
4. In calculating the S&P 500 index (which is a value-weighted index), stock splits should be:
 - a) Ignored because they occur so infrequently
 - b) adjusted for in the numerator of the index
 - c) adjusted for in the denominator of the index
 - d) Ignored because they do not affect the value of the index
5. You purchased a share of stock for \$20. One year later you received a \$1 dividend and sold the share for \$24. What was your holding period return?
 - a) 20.8 percent
 - b) 30.0 percent
 - c) 33.6 percent
 - d) 25.0 percent

6. An issue of equity to the public by a firm that currently has publicly traded equity is referred to as:
- a) A private placement
 - b) An initial public offering
 - c) A shelf registration
 - d) A seasoned offering
7. You short sell 500 shares of Yahoo stock at a price of \$23 per share, using the full initial margin of 55%. After a surprisingly positive earnings announcement, the stock price rises to \$31 per share. Your broker immediately gives you a margin call and requests that you add additional cash to your position to get back to the required maintenance margin level of 35%. How much cash do you need to add to your account?
- a) \$3,100
 - b) \$4,237
 - c) \$2,500
 - d) \$3,879
 - e) You should not be required to add any cash, since your position is still above the required maintenance margin
8. An Initial Public Offering in which the underwriter purchases the shares from the issuing firm and takes the risk of selling the shares to the public is known as:
- a) A firm commitment underwriting
 - b) A negotiated underwriting
 - c) A best efforts underwriting
 - d) A competitive underwriting
9. Initial Public Offerings typically outperform the market index in their first 3 to 5 years.
- a) True
 - b) False
10. Historically, stocks listed on the New York Stock Exchange have been traded by:
- a) 3 to 30 market makers on average
 - b) Competing market makers linked by computers and telephones
 - c) A single specialist
 - d) A single Saitoris
11. Specialists are either the buyer or seller in every trade.
- a) True
 - b) False

12. Which of the following refers selling stock borrowed from another investor?
- a) A Stop-loss order
 - b) A Margin trade
 - c) A Short sale
 - d) A Limit order
13. Assume you sold short 100 shares of common stock at \$50 per share. The initial margin is 60%. At what price will you receive a margin call if the maintenance margin is 40%?
- a) \$57.14
 - b) \$50.00
 - c) \$33.33
 - d) \$60.00

Lecture 2 – Portfolio Theory

14. The optimal combination of the risky portfolio and the risk-free security is designated by:
- a) the point of tangency between the investor's indifference curve and the capital allocation line
 - b) the point of tangency between the investor's indifference curve and the security market line
 - c) the point of tangency between the efficient frontier and the capital allocation line
 - d) the point of tangency between the efficient frontier and the security market line
15. The Reward-to-Variability ratio is given by:
- a) the slope of the capital allocation line
 - b) the second derivative of the capital allocation line
 - c) the excess return on a security divided by the security's beta
 - d) none of the above
16. An investor invests 40% of his wealth in a risky asset which has an expected return of 15% and a variance of 4% and 60% of his wealth in a risk-free security that pays 6%. What is the expected return and standard deviation of the portfolio?
- a) 8.0% and 12.0%, respectively
 - b) 9.6% and 8.0%, respectively
 - c) 9.6% and 10.0%, respectively
 - d) 11.4% and 12.0%, respectively
17. The efficient frontier is the set of possible investment portfolios that:
- a) have the minimum variance of all possible combinations
 - b) have the maximum return of all possible combinations
 - c) have equal weights in every risky security
 - d) have the maximum return for any given level of risk

18. Stock A has a variance of 0.25 and stock B has a variance of 0.18. The covariance between the two stocks is 0.05. What will be the variance of your complete portfolio if you invest 30% in stock A and 70% in stock B?
- a) 0.2010
 - b) 0.1317
 - c) 0.2150
 - d) 0.0550
19. Diversification is most effective when security returns are:
- a) high
 - b) negatively correlated
 - c) positively correlated
 - d) uncorrelated
20. In a well diversified portfolio, this type of risk is negligible.
- a) firm-specific risk
 - b) beta risk
 - c) market risk
 - d) systematic risk
21. Consider the investment opportunity set formed with two securities that are perfectly negatively correlated. The global minimum variance portfolio will have a standard deviation that is always:
- a) equal to the sum of the securities' standard deviations
 - b) equal to -1
 - c) equal to 0
 - d) greater than zero

Lecture 3 – Pricing Securities

22. According to the Capital Asset Pricing Model, fairly priced securities have:
- a) negative betas
 - b) positive alphas
 - c) zero betas
 - d) zero alphas
23. The beta of a security is equal to:
- a) the covariance between the security and market returns divided by the variance of the security's returns
 - b) the covariance between the security and market returns divided by the variance of the market's returns
 - c) the variance of the security's returns divided by the variance of the market's returns
 - d) the variance of the security's returns divided by the covariance between the security and market returns

24. Which of the following is NOT a true statement regarding the market portfolio if CAPM holds?
- all securities in the market portfolio are held in proportion to their market values
 - the market portfolio includes all securities in the market
 - the market portfolio is the tangency point between the capital market line and the indifference curve
 - the market portfolio lies on the efficient frontier
25. You estimate that the expected return on the market portfolio is 15% and the risk-free rate is 3%. Given these values, you estimate the expected return on Amoco stock to be 9%. Due to a sudden change in the economy, you revise your forecast for the expected return on the market to 10%. Assuming CAPM holds and that the risk of Amoco stock has not changed, how does this affect your forecast for the expected return on Amoco stock?
- Your new forecast is $E(R)_{\text{Amoco}} = 4.00\%$
 - Your new forecast is $E(R)_{\text{Amoco}} = 3.50\%$
 - Your new forecast is $E(R)_{\text{Amoco}} = 5.25\%$
 - Your new forecast is $E(R)_{\text{Amoco}} = 6.50\%$
26. Security Z has a beta of 1.25. If the expected return on the market is 12% and the return on the risk-free security is 5%, what must be the expected return on security Z if CAPM holds?
- 20.00%
 - 13.75%
 - 15.00%
 - 17.25%
27. Standard deviation and beta both measure risk, but they are different in that:
- beta measures both systematic and unsystematic risk
 - beta measures systematic risk while standard deviation measures total risk
 - beta measures total risk while standard deviation measures systematic risk
 - beta measures only unsystematic risk while standard deviation measures both systematic and unsystematic risk
28. Which of the following statements is NOT true if CAPM holds?
- the expected excess returns of a security are proportional to the beta of the security
 - all securities lie on the security market line
 - all securities lie on the capital market line
 - the expected excess returns of a security are proportional to the expected excess returns of the market
29. On a mean return - beta graph, the line that connects the risk-free rate and the optimal risky portfolio, P , is called the:
- capital market line
 - capital allocation line
 - security market line
 - security characteristic line

Lecture 4 – Efficient Markets and Behavioral Finance

30. The Weak form of the Efficient Markets Hypothesis suggests that:
- a) All publicly available information is incorporated into stock prices
 - b) All public and private information is incorporated into stock prices
 - c) All past trading information is incorporated into stock prices
 - d) Fundamental Analysis is not profitable
31. Researchers have found that the returns of small firms are typically:
- a) Very high in December
 - b) Very low in January
 - c) Very low in December
 - d) Very high in January
32. A recent graduate from the finance department at the University of Michigan calls you to inform you of a fool-proof investment strategy. According to this misinformed Wolverine fan, you can make risk-adjusted abnormal profits by purchasing every stock that announces a stock split. This type of profitable trading strategy would violate which form(s) of market efficiency?
- a) Weak form only
 - b) Semi-strong form only
 - c) Weak form and Semi-strong form
 - d) Semi-strong form and Strong form

Lecture 5 – Portfolio Performance Evaluation

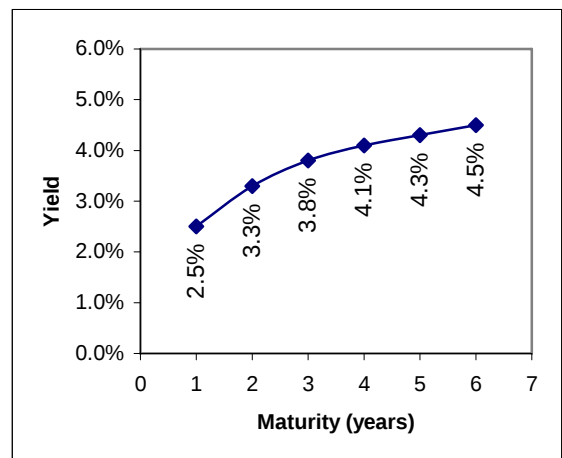
33. An investment company has \$3 billion in investments. If the entire \$3 billion investment is managed by one portfolio manager, that portfolio manager's performance should be evaluated using:
- a) The Appraisal Ratio
 - b) Jensen's Alpha
 - c) The Treynor Measure
 - d) The Sharpe Measure
34. Fund XYZ has a Jensen's alpha measure equal to 1.4%. Which of the following statements best describes the performance of fund XYZ?
- a) Fund XYZ is underperforming the market
 - b) Fund XYZ has a return above that predicted by the CAPM
 - c) Fund XYZ lies on the security market line
 - d) Fund XYZ is overpriced according to CAPM

35. You estimate security characteristic regressions for an equity portfolio (regressions of excess portfolio returns on excess market returns). Which of the following is an indication of market timing skill?
- a) A larger beta on low market return days than on high market return days
 - b) A positive coefficient on excess market returns
 - c) A negative intercept
 - d) A positive coefficient on squared excess market returns

Lecture 6 – Fixed Income Securities

36. For a given maturity and initial market yield, the duration of a bond increases as its coupon rate decreases.
- a) True
 - b) False

37. Consider the yield curve shown to the right. Based on the information in this graph and assuming the Expectations Theory holds, what is the market's expectation of the one-year rate of interest between years 4 and 5?



- a) 3.9%
- b) 5.1%
- c) 4.2%
- d) 5.4%

38. Which of the bonds described below will have the greatest percentage price change if market interest rates increase from 10% to 11%?

- a) Bond A: a \$1000 face value, 8% Coupon Bond, maturing in 10 years
- b) Bond B: a \$1000 face value, 8% Coupon Bond, maturing in 20 years
- c) Bond C: a \$1000 face value, 6% Coupon Bond, maturing in 20 years
- d) The bonds will all change in price by the same percentage

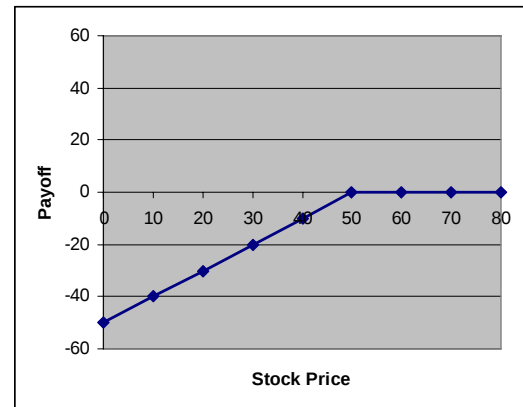
39. What would you pay for a \$1,000 face value, zero-coupon bond which matures in 16 years if market interest rates are currently 3%?

- a) \$623.17
- b) \$889.45
- c) \$1,000.00
- d) \$1,131.89

40. You own a bond that is currently selling for \$985.00 and has a duration of 3.5 years. Current market interest rates are 10%. If market interest rates decrease to 9%, what would you expect to happen to the price of the bond?
- decrease to \$953.66
 - decrease to \$970.00
 - increase to \$1016.34
 - increase to \$1000.00

Lecture 7 – Options

41. Which of the following options positions would result in the payoff diagram shown to the right (note: X =strike price)?



- Buying a Call option ($X=50$)
- Writing a Call option ($X=50$)
- Buying a Put option ($X=50$)
- Writing a Put option ($X=50$)
- None of the above

42. IBM stock is currently trading at \$41.75 per share and the risk-free rate is 4% per year. A one-year Call option on IBM stock with an exercise price of $X=\$40$ is currently trading for \$3.50. Based on Put-Call Parity, what is the value of a one-year Put option on IBM stock with an exercise price of $X=\$40$?

- \$0.21
 - \$0.68
 - \$1.01
 - \$1.43
 - the price cannot be determined from the information given
43. If the stock price increases, the price of a Put option on the stock will _____ and the price of a Call option on the stock will _____.
- decrease, decrease
 - decrease, increase
 - increase, decrease
 - increase, increase

PROBLEMS:

Lecture 1 – Securities Markets and Trading

1. You are given prices for two days on two stocks as shown below.

	<u>Day 1</u>	<u>Day 2</u>
Stock A	\$25.00	\$22.50
Stock B	\$42.50	\$40.00

- a) Calculate the return on a price weighted index of the two stocks.

- b) What is the return on an Equally-weighted index of the two stocks?

2. The initial margin rate is 50% and the maintenance margin rate is 30%. Assume you use the full amount of margin and sell short 75 shares of INTEL stock currently trading at \$100 per share.
 - a) What is the return on your position if the stock price drops to \$90 per share?
 - b) Given the short-position in question 6, at what price would you get a Margin Call from your broker?
3. You want to buy 100 shares of IBM on margin using an initial margin of 60%. Assume you can buy IBM at the current market price of \$175 per share.
 - a) What will be the return on your investment if the stock price increases to \$180 per share?
 - b) Assuming you enter into the margin transaction described above, at what price will your broker issue a margin call if the maintenance margin is 40%?

Lecture 2 – Portfolio Theory

4. You currently own shares in *Buckeye Mutual Fund (BMF)*. Your broker calls and recommends buying shares in a small-capitalization fund managed by *Wolverine Investment Group (WIG)*. Your broker says that this fund will provide significant diversification benefits for your existing holdings. She gives you the following statistics based on the performance of the two funds over the last year.

Portfolio	E(Return)	Std. Dev.
Buckeye Mutual Fund	20%	14%
Wolverine Investment Grp.	12%	11%

- a) Assume you can earn an average annual yield of 8% on a risk-free security. Which of these funds would be the optimal fund to combine with the risk-free security? Why?
- b) Using the fund you selected in part (a), how much portfolio weights in the fund and the risk-free security would be required to earn a target return of 22%? Describe this position.
- c) Assume the covariance between the Buckeye and Wolverine funds is 0.00154. What would have been your average return and standard deviation over the last year if you placed 60% of your investment in *Buckeye* and 40% of your investment in *Wolverine*?

5. Consider the stock return information provide below for two mutual funds. Use this information to answer the questions below.

	Fund A	Fund B
2003	12.0%	8.0%
2004	9.0%	16.0%
2005	15.0%	25.0%
2006	5.0%	3.0%
2007	-3.0%	10.0%

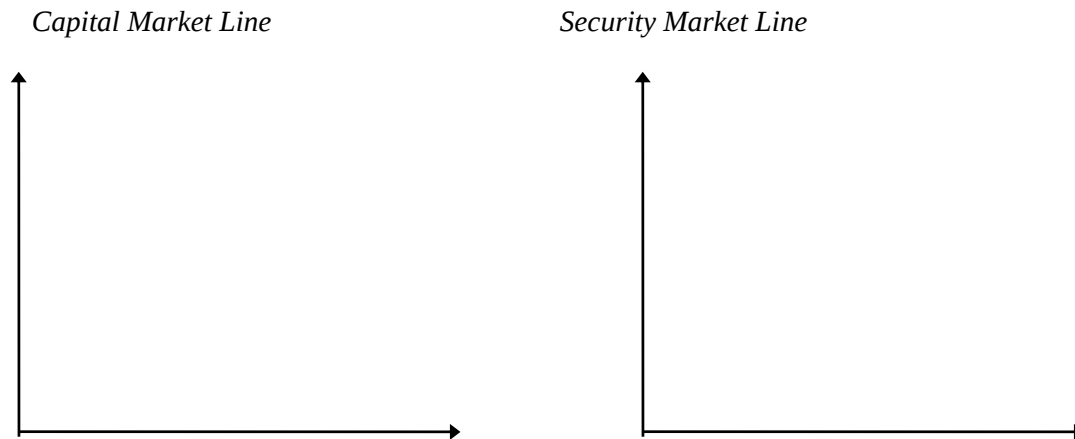
- a) Calculate the mean return for each of the funds across the five years.
- b) Calculate the standard deviation of returns for each of the funds across the five years.
- c) Calculate the covariance between the returns of the two stocks.
- d) Calculate the correlation between the returns of the two stocks.

Lecture 3 – Pricing Securities

6. Consider the information below for portfolios M , F , X , Y and Z . Portfolio M represents the market portfolio. F is the risk-free security. Portfolios X , Y and Z can be thought of as individual securities or portfolios of securities.

Portfolio	Expected Return	Std. Deviation	Beta
M (market)	10.0%	20.0%	?
F (risk-free)	4.0%	0.0%	?
X	6.0%	30.0%	?
Y	8.0%	40.0%	?
Z	14.0%	40.0%	?

- a) Draw the Capital Market Line (CML) and the Security Market Line (SML) for the data described above - assuming CAPM holds. Be sure to place values and labels on the axes and label points M , F , X , Y , and Z .



- b) Stocks Y and Z are equally risky since they have the same standard deviation. True or False? Why?

Lecture 5 – Portfolio Performance Evaluation

7. BigSpend Magazine produced their annual survey of the performance of unknown mutual funds. The following regression information and general data is drawn from their survey of quarterly returns for the previous three years of trading activity.

	Excess Return Regressions $R_{pt} - r_{ft} = \alpha + \beta(R_{mt} - r_{ft}) + \varepsilon_{pt}$			Excess Returns $(R_p - r_f)$	
Fund	α	β	R^2	Mean	Std. Dev.
Acorn	1.40%	1.13	83.1%	3.82%	11.02%
Hartwell	0.44%	1.58	71.3%	4.10%	13.41%
Scudder	-0.62%	0.54	54.2%	0.55%	6.54%

- a) Compute the Sharpe and Treynor measures for the three portfolios and rank the portfolios accordingly. Are the rankings consistent across measures? Why or why not?
- b) Assume that you now own shares of Acorn and your broker is suggesting that you sell them and buy shares of Hartwell. The broker's rationale is that the average return on Hartwell is better than for Acorn. Based on the data above, how would you respond to your broker?

Lecture 6 - Fixed Income Securities

8. Fixed Income Securities

Consider the two bonds described below. Use the information for these two bonds to answer the following questions.

Bond A:	10% coupon (annual)	5 years to maturity
Bond B:	Zero coupon bond	10 years to maturity

- a) Assuming the market yield on both bonds is currently 8%, calculate the prices of these two bonds.
- b) Again, assuming the market yield is 8%, calculate the durations of each of these bonds.
- c) Suppose you manage fixed income investments for the Indiana Lottery. You know that the lottery has a commitment to pay out \$1,000,000 seven (7) years from today. Based on your answers to parts (a) and (b), calculate the positions you could take today in bonds A and B that would immunize the Lottery against interest rate risk during the next seven years? (In other words, how many of each of these two bonds would you need to buy today to hedge your \$1,000,000 liability against interest rate risk?)

Lecture 7 - Options

9. Use the stock and option prices below to answer the following questions related to option positions. All options have one year to expiration and exercise prices of $X=\$40$. (Note: there are no margin requirements for shorting the stock).

Stock Price	\$34.75
Call Price ($X=\$40$)	\$3.75
Put Price ($X=\$40$)	\$8.50
Risk-free rate	4.00%

- a) Suppose you take the following position based on the current prices: purchase one share of stock, purchase TWO Put options, and Write one Call option. Using the table below, calculate the payoffs AND profits from this investment strategy for stock prices ranging from \$0 to \$60.

Stock Price	Position Payoffs			Total Payoffs	Profit
	Buy Stock	Buy 2 Puts	Write 1 Call		
0					
10					
20					
30					
40					
50					
60					

- b) Draw the Payoffs AND Profits on the graph shown below (be sure to label which is which).

