Econ435 – Financial Markets and the Macroeconomy

Fall 2005

Midterm

The exam consists of 40 multiple choice questions and one essay question. Please answer ALL of them.

The duration of the exam is 1 hr 30 mins. DO NOT OPEN the exams until you are told to do so and STOP writing when you are told that the exam is over. <u>Failure to comply will result in a 10% loss in the grade.</u>

Do not forget to write your name and university ID number, as well as the color of your exam, on the scantron.

NO PROGRAMMABLE OR FINANCIAL CALCULATORS ARE ALLOWED. Only simple or scientific calculators can be used.

GOOD LUCK!

1. The efficient frontier of risky assets is
   A) the portion of the investment opportunity set that lies above the global minimum variance portfolio.
   B) the portion of the investment opportunity set that represents the highest standard deviations.
   C) the portion of the investment opportunity set which includes the portfolios with the lowest standard deviation.
   D) the set of portfolios that have zero standard deviation.
   E) both A and B are true.

2. A call option allows the buyer to
   A) sell the underlying asset at the exercise price on or before the expiration date.
   B) buy the underlying asset at the exercise price on or before the expiration date.
   C) sell the option in the open market prior to expiration.
   D) A and C.
   E) B and C.

3. The value of a derivative security _______.
   A) depends on the value of the related primitive security
   B) can only cause increased risk.
   C) is unrelated to the value of the related primitive security
   D) has been enhanced due the recent misuse and negative publicity regarding these instruments
   E) is worthless today

4. Assume that you purchased shares of High Flying mutual fund at a net asset value of $12.50 per share. During the year you received dividend income distributions of $0.78 per share and capital gains distributions of $1.67 per share. At the end of the year the shares had a net asset value of $13.87 per share. What was your rate of return on this investment?
   A) 29.43%
   B) 30.56%
   C) 31.19%
   D) 32.44%
   E) 29.18%

5. You want to purchase IBM stock at $80 from your broker using as little of your own money as possible. If initial margin is 50% and you have $2000 to invest, how many shares can you buy?
   A) 100 shares
   B) 200 shares
   C) 50 shares
   D) 500 shares
   E) 25 shares

6. Investors in closed-end funds who wish to liquidate their positions must
   A) sell their shares through a broker.
   B) sell their shares to the issuer at a discount to Net Asset Value.
   C) sell their shares to the issuer at a premium to Net Asset Value.
   D) sell their shares to the issuer for Net Asset Value.
   E) hold their shares to maturity.

7. Which of the following are characteristics of preferred stock?

   I) It pays its holder a fixed amount of income each year, at the discretion of its managers.
   II) It gives its holder voting power in the firm.
   III) Its dividends are usually cumulative.
   IV) Failure to pay dividends may result in bankruptcy proceedings.
   A) I, III, and IV
   B) I, II, and III
   C) I and III
   D) I, II, and IV
   E) I, II, III, and IV

8. A mutual fund had year-end assets of $250,000,000 and liabilities of $4,000,000. There were 3,750,000 shares in the fund at year-end. What was the mutual fund's Net Asset Value?
   A) $92.53
   B) $67.39
   C) $63.24
   D) $65.60
   E) $17.46

9. Assume you purchased 200 shares of XYZ common stock on margin at $70 per share from your broker. If the initial margin is 55%, how much did you borrow from the broker?
   A) $6,000
   B) $4,000
   C) $7,700
   D) $7,000
   E) $6,300

10. Assume you sell short 1000 shares of common stock at $35 per share, with initial margin at 50%. What would be your rate of return if you repurchase the stock at $25/share? The stock paid no dividends during the period, and you did not remove any money from the account before making the offsetting transaction.
    A) 20.47%
    B) 25.63%
    C) 57.14%
    D) 77.23%
    E) none of the above

Use the following to answer questions 11-13:

You invest $100 in a risky asset with an expected rate of return of 11% and a standard deviation of 20% and a T-bill with a rate of return of 3%.

11. What percentages of your money must be invested in the risk-free asset and the risky asset, respectively, to form a portfolio with a standard deviation of 8%?
    A) 30% and 70%
    B) 50% and 50%
    C) 60% and 40%
    D) 40% and 60%
    E) Cannot be determined.

12. The slope of the Capital Allocation Line formed with the risky asset and the risk-free asset is equal to
    A) 0.47
    B) 0.80
    C) 2.14
    D) 0.40
    E) Cannot be determined.

13. What percentages of your money must be invested in the risky asset and the risk-free asset, respectively, to form a portfolio with an expected return of 8%?
    A) 85% and 15%
    B) 75% and 25%
    C) 62.5% and 37.5%
    D) 57% and 43%
    E) cannot be determined

14. An investor can choose to invest in T-bills paying 3% or a risky portfolio with end-of-year cash flow of $18,000. If the investor requires a risk premium of 7%, what would she be willing to pay for the risky portfolio?
    A) $18,000.00
    B) $16,363.64
    C) $17,264.81
    D) $15,956.12
    E) $14,700.96

15. Which of the following are mechanisms that have evolved to mitigate potential agency problems?

    I) compensation in the form of the firm's stock options
    II) hiring bickering family members as corporate spies
    III) underperforming management teams being forced out by boards of directors
    IV) security analysts monitoring the firm closely
    V) takeover threats
    A) II and V
    B) I, III, and IV
    C) I, III, IV, and V
    D) III, IV, and V
    E) I, III, and V

16. Which of the following orders is most useful to short sellers who want to limit their potential losses?
    A) Limit order
    B) Discretionary order
    C) Limit-loss order
    D) Stop-buy order
    E) None of the above

17. Through diversification, investors try to eliminate:
    A) market risk.
    B) firm-specific risk.
    C) the risk generated by economy-wide factors.
    D) both B and C.

18. Firms that specialize in helping companies raise capital by selling securities are called ________.
    A) commercial banks
    B) investment banks
    C) savings banks
    D) credit unions
    E) all of the above.

Use the following to answer questions 19-20:

Consider two perfectly negatively correlated risky securities A and B. A has an expected rate of return of 10% and a standard deviation of 16%. B has an expected rate of return of 8% and a standard deviation of 12%.

19. The risk-free portfolio that can be formed with the two securities will earn _____ rate of return.
    A) 8.5%
    B) 9.0%
    C) 8.9%
    D) 9.9%
    E) none of the above

20. The weights of A and B in the global minimum variance portfolio are _____ and _____, respectively.
    A) 0.24; 0.76
    B) 0.50; 0.50
    C) 0.57; 0.43
    D) 0.43; 0.57
    E) 0.76; 0.24

21. You purchased 1000 shares of CSCO common stock on margin at $19 per share. Assume the initial margin is 50% and the maintenance margin is 30%. Below what stock price level would you get a margin call? Assume the stock pays no dividend; ignore interest on margin
    A) $12.86
    B) $15.75
    C) $19.67
    D) $13.57
    E) none of the above

22. Consider an investment opportunity set formed with two securities that are perfectly negatively correlated. The global minimum variance portfolio has a standard deviation that is always
    A) greater than zero.
    B) equal to zero.
    C) equal to the sum of the securities' standard deviations.
    D) equal to -1.
    E) none of the above.

23. You purchased shares of a mutual fund at a price of $20 per share at the beginning of the year and paid a front-end load of 5.75%. If the securities in which the fund invested increased in value by 11% during the year, and the funds expense ratio was 1.25%, your return if you sold the fund at the end of the year would be ___.
   A) 4.33
   B) 3.44
   C) 2.45
   D) 6.87
   E) None of the above

24. John is more risk-averse than Tom. They both have utility functions of the form $U = E(r) - 0.005A\sigma^2$. Which of the following statements is **true**:
   A) The value of A is higher for Tom than for John.
   B) The value of A is lower for John than for Tom.
   C) The value of A is higher for John than for Tom.
   D) The value of A is the same for both Tom and John.
   E) The value of A does not depend on the risk-aversion of Tom or John.

25. In the mean-standard deviation graph an indifference curve has a ________ slope.
   A) negative
   B) zero
   C) positive
   D) northeast
   E) cannot be determined

26. Adding a home insurance policy to your portfolio of assets is an example of ______.
   A) speculating
   B) asset dominance
   C) hedging
   D) neurosis
   E) risk neutrality

27. An investor purchases one municipal and one corporate bond that pay rates of return of 7.2% and 9.1%, respectively. If the investor is in the 15% marginal tax bracket, his or her after tax rates of return on the municipal and corporate bonds would be ________ and ______, respectively.
   A) 7.2% and 9.1%
   B) 7.2% and 7.735%
   C) 6.12% and 7.735%
   D) 8.471% and 9.1%
   E) None of the above

Use the following to answer questions 28-29:

Consider the following two investment alternatives. First, a risky portfolio that pays a 15 percent rate of return with a probability of 60% or a 5 percent return with a probability of 40%, and second, a T-bill that pays 6 percent.

28. The risk premium on the risky investment is
    A) 11 percent.
    B) 1 percent.
    C) 9 percent.
    D) 5 percent.
    E) none of the above.

29. If you invest $50,000 in the risky portfolio, your expected profit would be__________.
    A) $5,500
    B) $7,500
    C) $25,000
    D) $3,000
    E) none of the above

30. A mutual fund had year-end assets of $521,000,000 and liabilities of $63,000,000. If the fund NAV was $26.12, how many shares must have been held in the fund?
    A) 17,534,456
    B) 16,488,372
    C) 18,601,742
    D) 17,542,515
    E) None of the above.

31. Which one of the following statements regarding open-end mutual funds is **false?**
    A) The funds redeem shares at net asset value.
    B) The funds offer investors professional management.
    C) The funds offer investors a guaranteed rate of return.
    D) B and C.
    E) A and B.

32. Which one of the following statements regarding hedging is **true**?
    A) Hedging is adding securities to an existing portfolio to increase the overall return.
    B) Hedging is a strategy used by investors to increase both the risk and return of a portfolio.
    C) Hedging is a strategy used by investors to reduce the risk of a portfolio.
    D) Hedging is a strategy used to increase portfolio volatility.
    E) None of the above is true.

33. Treasury bills are commonly viewed as risk-free assets because
    A) their short-term nature makes their values insensitive to interest rate fluctuations.
    B) the inflation uncertainty over their time to maturity is negligible.
    C) their term to maturity is identical to most investors' desired holding periods.
    D) Both A and B are true.
    E) Both B and C are true.

34. In the mean-standard deviation graph, the line that connects the risk-free rate and the optimal risky portfolio, P, is called ______________.
    A) the Security Market Line
    B) the Capital Allocation Line
    C) the Indifference Curve
    D) the investor's utility line
    E) none of the above

35. A T-bill pays 6 percent rate of return. Would risk-averse investors invest in a risky portfolio that pays 12 percent with a probability of 40 percent or 2 percent with a probability of 60 percent?
    A) Yes, because they are rewarded with a risk premium.
    B) No, because they are not rewarded with a risk premium.
    C) No, because the risk premium is small.
    D) Cannot be determined.
    E) None of the above.

36. Other things equal, diversification is most effective when
    A) securities' returns are uncorrelated.
    B) securities' returns are positively correlated.
    C) securities' returns are high.
    D) securities' returns are negatively correlated.
    E) B and C.

37. Investment bankers
    A) act as intermediaries between issuers of stocks and investors.
    B) act as advisors to companies in helping them analyze their financial needs and find buyers for newly issued securities.
    C) accept deposits from savers and lend them out to companies.
    D) A and B.
    E) A, B, and C.

38. Market risk is also referred to as
    A) systematic risk, idiosyncratic risk.
    B) systematic risk.
    C) unique risk, nondiversifiable risk.
    D) unique risk, diversifiable risk.
    E) none of the above.

39. You sell short 100 shares of Loser Co. at a market price of $45 per share. Your maximum possible loss is
    A) $4500
    B) unlimited
    C) zero
    D) $9000
    E) cannot tell from the information given

40. The bid price of a T-bill in the secondary market is
    A) the price at which the dealer in T-bills is willing to sell the bill.
    B) the price at which the dealer in T-bills is willing to buy the bill.
    C) greater than the asked price of the T-bill.
    D) the price at which the investor can buy the T-bill.
    E) never quoted in the financial press.

Question 1

(i) Explain what is the principal-agent problem in corporate finance and describe (in one paragraph each) three ways to deal with it. Make sure to explain the advantages and, most importantly, the disadvantages of each of the three solutions.

(ii) The evolution of the stock market is shown in the table below:

	Year 0		Year 1	
	Price	No. of shares	Price	No. of shares
Stock A	63	150	26	450
Stock B	42	370	38	370
Stock C	18	230	20	230

Calculate the price-weighted index for years 0 and 1, and the value-weighted index for year 1 given a value of $1,000$ points of the value-weighted index in year 0.