Name: _____
Date: _____

Directions:

1. Total Time Limit = 3 HOURS.

START TIME = _____

END TIME = _____

2. This is a closed book, closed notes exam. You are allowed two (2) 3x5 note cards (front and back) for your use during the exam.

3. You are not to discuss the exam with anyone before, during, or after taking the exam. Starting November 8 (the day after the exam is due), you may discuss the exam with friends or classmates.

4. **Honor Pledge**

After completing the exam, **please write out and sign the following honor pledge**:

On my honor as a Christian student, I have taken this exam within the time alloted, I have not used any prohibited resources, and I have not given any aid to anyone else on this exam.

Rewrite the honor pledge here and sign:

1. Suppose that the market value of a zero-coupon bond that matures in 8 years is $676.84. If interest rates are constant over all maturities, what should be the market price of a coupon bond that has an annual coupon rate of 7.5% and 3 years remaining to maturity?

2. ABC is considering the purchase of a new machine. The machine has a cost of $240,000 and an expected life of 3 years. The cost will be depreciated straight-line to a zero salvage value. After 3 years the machine can be sold for $25,000. The purchase of this machine will result in an increase in earnings before interest and taxes (EBIT) of $100,000 per year. To operate this machine properly, the firm will also need to invest $15,000 in net working capital at year 0. this additional net working capital will be recovered in full at the end of the project life. The corporate tax rate is 34%. If the appropriate discount rate is 10%, what is the project's NPV and should ABC do the project?

Use the following to answer problems 3 and 4.

Stock A has just paid a dividend of $2.00 per share. Dividends are expected to grow at a rate of 12 percent during the next year and at a constant rate of 4 percent thereafter. The market beta of stock A is 1.3. Suppose the expected return of stock B is equal to 10%. If the risk-free rate is 6% and the market beta of stock B is 0.8, what should be the market price of stock A? Assume that the Capital Asset Pricing Model (CAPM) holds.

3. What is the expected return on the market portfolio?

4. If the expected return on stock A is 12.%%, what should the market price of Stock A be?

Use the following to answer problems 5 through 8.

Consider the following information on the returns on the market portfolio and XYZ stock.

Year	Market Portfolio	XYZ
1980	0.32	0.40
1981	-0.05	0.14
1982	0.21	0.28

5. What is the variance for the market portfolio?

6. What is the covariance between the market portfolio and stock XYZ?

7. What is the beta of stock XYZ?

8. Assuming the Capital Asset Pricing Model (CAPM) holds, what is the expected return of stock XYZ?

Use the following to answer problems 9 through 10:

Below are the returns for two assets under three equally-likely states of nature.

State of Nature	Stock A return	Stock B return
Weak Growth	15%	15%
Strong Growth	30%	12%
Verby Strong Growth	45%	9%

9. What is the expected return for Stock A?

10. If the expected return of Stock B is 12%, what is the expected return of a portfolio made up of 40% asset A and 60% asset B?

BONUS:
What is the standard deviation of a portfolio made up of 40% asset A and 60% asset B?

11. How long does it take for money to triple if you earn 7% annual interest?

12. Francine works at ABC and expects her annual salary to grow steadily at 5% per year for the next 10 years, when she expects to retire. Her current salary, which has just been paid, is $60,000. If Francine can earn 8% on her investments, what is the present value of her **remaining** annual salaries?

13. Consider a firm with existing assets that generate an EPS of $3. If the return on its assets is 18% and its payout ratio is 55%, what is the price of the stock?

14. In Chapter 13 we discussed studies of the performance of professionally managed mutual funds. What do these findings show about mutual funds relative to the market index? Which form of the efficient market hypothesis do the findings support or violate?

15. A firm has a debt-to-equity ratio of 1. Its cost of equity is 16%, and its cost of debt is 8%. If the corporate tax rate is 25%, what would its cost of equity be if the debt-to-equity ratio were 0?
    A) 11.11%.
    B) 12.57%.
    C) 13.33%.
    D) 16.00%.
    E) None of the above.

16. The Aggie Company has EBIT of $50,000 and market value debt of $100,000 outstanding with a 9% coupon rate. The cost of equity for an all equity firm would be 14%. Aggie has a 35% corporate tax rate. Investors face a 20% tax rate on debt receipts and a 15% rate on equity. Determine the value of Aggie.

17. When should the APV method be used to value a project?

Use the following to answer questions 18-20:

The Windsor Company has perpetual EBIT of $3,000. It has no debt in its capital structure, and its cost of equity is 15%. The corporate tax rate is 40%. There are 300 shares outstanding. Windsor has announced that it will borrow $3,750 in perpetual debt at 8% and use the proceeds to buy up stock.

18. Assume the corporate tax rate is 50%. A firm has perpetual expected EBIT of $100. The firm has no debt in its capital structure. Its cost of equity is 10%. What would be the value of the firm if it issued $400 in perpetual debt?

19. What will the stock price now be after the recapitalization?

20. How many shares will be purchased?

21. The Tip-Top Paving Co. has an equity cost of capital of 16.97%. The debt to value ratio is .6, the tax rate is 34%, and the cost of debt is 11%. What is the cost of equity if Tip-Top was unlevered?

22. The Free-Float Company, a company in the 36% tax bracket, has riskless debt in its capital structure which makes up 40% of the total capital structure, and equity is the other 60%. The beta of the assets for this business is .8 and the equity beta is

23. A project has a NPV, assuming all equity financing, of $1.5 million. To finance the project, debt is issued with associated flotation costs of $60,000. The flotation costs can be amortized over the project's 5 year life. The debt of $10 million is issued at 10% interest, with principal repaid in a lump sum at the end of the fifth year. If the firm's tax rate is 34%, calculate the project's APV.

24. You owned 200 shares last year and received a stock dividend of 5% at the end of last year. The number of shares you now have is _____ and your wealth has increased by _____ percent.

25. Schaeffer Shippers announced that on May 1, 2004, that it will pay a dividend of $5.00 per share on June 15 to all holders on record as of May 31st. The firm's stock price is currently at $70 per share. Assume that all investors are in the 33% tax bracket. Given that the ex-dividend date is May 29, what should happen to Schaeffer's stock price on May 29?

26. A stock has both a call and a put option outstanding. The exercise price was set equal to the stock price. If the option were to expire now what would be the minimum value of the call and the put respectively?
    A) $(S_T - E); \geq 0$
    B) $0; (S_T - E)$
    C) $<0; >0$
    D) $0; 0$
    E) $(E - S_T); (S_T - E)$

27. Suppose a stock can be purchased for $8, a put option on the stock can be purchased for $1.50, and a call option on the stock can be written (i.e., sold) for $1.00. If holding these positions in combination can guarantee a payoff of $10 at the end of the year, then what must the risk-free rate be if no arbitrage opportunities exist?

28. The Federal Reserve Board decreases open-market purchases, which results in a general increase in interest rates. What is the impact of this change on the price of the call option for stock A?

29. Suppose a situation exists where you can purchase a share of stock for $25, purchase a put option on the stock for $3, and write a call option against the stock for $4. Also, suppose that holding these three positions guarantees a payoff of $30 one year from today. If the risk free rate is 20%, does put-call parity hold? If so, prove it. If not, then what new price of the put option would allow put-call parity to hold?

30. In terms of relating options to the value of the firm, how can the equity of the firm be viewed?