Print Last Name: ➔	**Print First Name:** ➔	**ID Number:** ➔	
COURSE FINANCE	**NUMBER** COMM 308	**SECTIONS: (➔ Circle your section)** A, AA, B, BB, C, D, E	
EXAMINATION Final Exam **VERSION BLUE**	**DATE** December 10, 2010	**TIME** 3 hours	**# OF PAGES 16** including cover
INSTRUCTOR: **(➔ Underline your instructor's name)** Rahul Ravi Jennifer Yang Penelope Ellison Ravi Mateti June Riley		**DIVISION** John Molson School of Business Concordia University	

READ THESE SPECIAL INSTRUCTIONS CAREFULLY

- This is Version BLUE of the test. You must submit a BLUE computer answer sheet.

- For Multiple Choice Questions,
All answers must be recorded IN PENCIL on the computer sheet.
- For Problems:
All answers must be recorded IN INK within this exam.
Show your calculations to earn part marks. Write in the space provided.
- If you are using the back of the exam for answering any question, you should label it clearly

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- Please ensure you have 16 pages (including cover) in this exam.

- Fill in your name and other required information IN PENCIL on the Computer Answer sheet as well as IN INK on this cover sheet.

- Blank questions or those with multiple answers will not receive credit.

SCORES (FOR INTERNAL USE ONLY)

Part I Multiple Choice Questions	**Part II Long Answer Questions**				
	Question 1	Question 2	Question 3	Question 4	
(Max: 70 Points)	(Max: 8 Points)	(Max: 6 Points)	(Max: 8 Points)	(Max: 8 Points)	**Total**

Part I: Multiple Choice Questions (28 Questions, 70 Points Total):

- This part consists of 28 Multiple Choice Questions.
- Each question counts 2.5 points for a total of 70 points.
  - **Only answers on the computer answer sheet will be graded.**
  - **Use a pencil to mark your answers on the Computer Sheet.**

1. A _____ can lose, at most, what she has already invested in a firm.
   I. common stockholder
   II. limited partner
   III. general partner
   IV. sole proprietor
   A) I only
   B) I and II only
   C) I, II, and IV only
   D) II, III, and IV only
   E) II and III only

2. You are choosing between investments offered by two different banks. One promises a return of 10% for three years using simple interest while the other offers a return of 10% for three years using compound interest. You should:
   A) Choose the simple interest option because both have the same basic interest rate.
   B) Choose the compound interest option because it provides a higher return.
   C) Choose the compound interest option only if the compounding is for monthly periods.
   D) Choose the simple interest option only if compounding occurs more than once a year.
   E) Choose the compound interest option only if you are investing less than $5,000.

3. Which of the following statements is (are) true concerning the present value of a single sum?
   I. The higher the discount rate, the higher the present value.
   II. The longer the time period, the higher the present value.
   III. The larger the future value, the larger the present value.
   IV. The larger the present value factor, the larger the present value.
   A) IV only
   B) I and IV only
   C) III and IV only
   D) I, III, and IV only
   E) I, II, III, and IV

4. At a 3% rate of interest, you will quadruple your money in approximately ____ years.
   A) 3
   B) 6
   C) 12
   D) 24
   E) 48

5. An account was opened with $1,000 ten years ago. Today, the account balance is $1,500. If the account paid interest compounded annually, how much interest on interest was earned?
   A) $86.20
   B) $93.10
   C) $102.39
   D) $130.28
   E) $500.00

6. A customer makes two offers to settle a disputed account. He will either pay you $500 today or pay you $650 in three years. Which one of the following is correct if your company earns 10.5% on its surplus funds?
   A) The company should accept the $650 offer as it pays $150 more.
   B) The company should accept the $650 offer as it is worth more today.
   C) The company should accept the $650 offer as it is worth $12.42 more today.
   D) The company should accept the $500 offer as it is worth $18.24 more today.
   E) The company should accept the $500 offer as it is worth $512.42 today.

7. Your banker quotes you two different loan payments on a $12,000 car loan, one calling for 36 monthly payments and the other calling for 24 monthly payments. Both loans have the same APR and EAR. She then tells you that the shorter loan is a better deal because the total payments you would make over the life of the loan would be lower. What is she ignoring?
   A) The payment would be lower on the 24 month loan.
   B) The 24 month contract will actually cost you more in total payments, not less.
   C) The interest you could earn by saving the difference between the two loan payments.
   D) The fact that you must make 12 more payments on the longer term loan.
   E) The APR and EAR for the two loans are irrelevant.

8. In order to help you through college, your parents just deposited $25,000 into a bank account paying 8% interest. Starting tomorrow, you plan to withdraw equal amounts from the account at the beginning of each of the next four years. What is the MOST you can withdraw annually?
   A) $6,125.43
   B) $6,988.91
   C) $7,133.84
   D) $7,548.02
   E) $8,154.71

9. You have found your dream home in Chicoutimi, Quebec. The selling price is $120,000; you will put $20,000 down and obtain a 25-year fixed-rate mortgage at 8.25% for the rest. Although you will get a 25-year mortgage, you plan to prepay the loan by making an additional payment each month along with your regular payment. How much extra must you pay each month if you wish to pay off the loan in 20 years? Canadian Mortgages are quoted as APR compounded semiannually.
   A) $24.56
   B) $54.88
   C) $64.17
   D) $93.28
   E) $106.86

10. Your broker offers you the opportunity to purchase a bond with coupon payments of $90 per year and a face value of $1,000. If the yield to maturity on similar bonds is 8%, this bond should:
   A) Sell for the same price as the similar bond regardless of their respective maturities.
   B) Sell at a premium.
   C) Sell at a discount.
   D) Sell for either a premium or a discount but it's impossible to tell which.
   E) Sell for par value.

11. Suppose you read that a bond with a face value of $1,000 and a coupon of $80 per year has a yield to maturity of exactly 8%. How many years remain until maturity?
    I. Greater than 20 years
    II. Greater than 10 years but less than 20
    III. Less than 10 years
    A) I only
    B) II only
    C) III only
    D) I, II, or III may be correct
    E) Non of the above

12. JM, Inc. just issued 10-year, 8% coupon bonds at par. Outstanding HE Corp. bonds, which have a maturity of 10 years, sell at a premium to par and are viewed by investors as having the same risk as the JM bonds. Therefore, it must be true that:
    A) The coupon rate on the HE bonds is equal to that on the JM bonds.
    B) The coupon rate on the HE bonds is higher than that on the JM bonds.
    C) The coupon payment on the HE bonds is lower than that on the JM bonds.
    D) The yield on HE bonds is higher than the yield on JM bonds.
    E) The HE bonds pay coupons more often than twice a year.

13. As a corporate treasurer, you manage a $100 million bond portfolio. Economists suggest (and you believe) that market interest rates are headed up over the next several months. To reduce interest rate risk you should attempt to:
    I. Reduce the average maturity of the portfolio by selling long-term bonds and buying short-term bonds.
    II. Lengthen the average maturity of the portfolio by buying long-term bonds and selling short-term bonds.
    III. Reduce the average coupon rate by selling high-coupon bonds and buying low-coupon bonds.
    IV. Increase the average coupon rate by buying high-coupon bonds and selling low-coupon bonds.
    A) I only
    B) I and II only
    C) II and III only
    D) I and IV only
    E) I, II, III, and IV

14. Jamie owes $21,750 at a 5% rate of interest. The minimum amount that she must pay monthly is $230.69. How much faster can she pay off this loan if she makes monthly payments of $300.00?
    A) 1.68 years sooner
    B) 2.54 years sooner
    C) 2.79 years sooner
    D) 2.93 years sooner
    E) 3.01 years sooner

15. Alhandro, Inc. just paid an annual dividend of $1.03. They have been increasing their dividends by 4% annually and are expected to continue doing so. How much can they expect to receive for each new share of stock offered if investors require an 11% rate of return?
    A) $9.36
    B) $9.74
    C) $14.71
    D) $15.30
    E) $15.91

16. If the required return is zero, then:
    A) The payback period exceeds the discounted payback period.
    B) The NPV equals the difference between the sum of the undiscounted future cash flows and the initial cost.
    C) If the NPV is negative, the IRR will be greater than zero.
    D) The PI will be less than one.
    E) The project will be acceptable according to the AAR criteria.

17. You discover the engine-oil additive your scientists developed three years ago makes a great men's after-shave once diluted properly using certain chemicals. How should you treat the original $125,000 of R&D expenditures that went into developing the engine-oil additive for your present decision regarding whether or not to begin production of the after-shave?
    A) Treat it as a cash outflow three years ago for the current project; that is, find the future value today of the $125,000 spent three years ago.
    B) The full $125,000 should be treated as an initial investment today.
    C) As a cash inflow since the formula has obviously increased in value over the years.
    D) As an opportunity cost if the formula cannot presently be sold to another manufacturer.
    E) As a sunk cost since the R&D expenditure has no bearing on today's decision.

18. You have a portfolio consisting of equal amounts of IBM stock and Treasury bills. If you replace half of the Treasury bills with more IBM stock, the portfolio expected return will likely _____ and its risk will likely_____, all else the same.
    A) increase, increase
    B) decrease, increase
    C) increase, decrease
    D) decrease, decrease
    E) either increase or decrease, either increase or decrease

19. The principle of diversification states that spreading an investment over a number of assets will eliminate:
    A) All of the risk.
    B) All of the systematic risk and part of the unsystematic risk.
    C) All of the unsystematic risk and part of the systematic risk.
    D) Most of the systematic risk.
    E) Most of the unsystematic risk.

20. Marge Cosmetics just announced that earnings for the first quarter of the current year grew at an annualized rate of 3%, well above the rate for the same quarter the previous year. Upon the announcement, the stock price did not change. (The market in general was also unchanged). Which of the following is most likely correct?
    A) Marge's price didn't change since the market was surprised by the announcement.
    B) Interest rates in the economy must have increased.
    C) Marge's price didn't change because investors likely anticipated the news release.
    D) Marge's price didn't change because the market in general was unchanged.
    E) Marge must have a beta coefficient equal to 1.

21. Which of the following is correct regarding the CAPM?
    A) The expected return for a particular asset depends on the pure time value of money as measured by beta
    B) The expected return for a particular asset depends on the amount of systematic risk as measured by the risk free rate
    C) The standard deviation for a particular asset depends on the reward for bearing risk as measured by beta
    D) Implicit in the CAPM is that all risky assets have the same reward to risk ratio
    E) The SML and CAPM illustrate that the higher the beta, the lower the expected return

22. Standard deviation measures the ____ risk and beta measures the ____ risk of a portfolio.
    A) Unsystematic; systematic
    B) Systematic; unsystematic
    C) Unsystematic; total
    D) Total; unsystematic
    E) Total; systematic

23. Suppose the Bank of Canada increased the rate on T-bills. As a result of this action, the security market line of a risky individual security would:
    A) Remain constant.
    B) Have an increased slope.
    C) Have a decreased slope.
    D) Increase in a parallel manner.
    E) Decrease in a parallel manner.

24. What is the expected return on a portfolio that is invested 40% in stock A and 60% in stock B, given the following information?

Economic State	Probability of State	Return on Stock A	Return on Stock B
Normal	70%	12%	5%
Recession	30%	-10%	8%

    A) 5.40%
    B) 5.70%
    C) 6.40%
    D) 7.80%
    E) 8.10%

25. What is the beta of the following portfolio?

Stock	A	B	C
Amount Invested	$5,000	$10,000	$15,000
Stock Beta	1.20	1.80	0.70

    A) .98
    B) 1.15
    C) 1.19
    D) 1.21
    E) 1.23

26. A firm's WACC is applicable to those projects that:
    A) Are considered within one year of the date of the information used in the WACC computation.
    B) Are similar in risk to the current operations of the firm.
    C) Represent new avenues of business for the firm.
    D) Payback within the required period of time.
    E) Are pure plays in new areas of business.

27. A local retail store allows you to return the merchandise you purchase and get your money back for up to 30 days after the purchase date. The store has, in effect, provided each shopper with _____ options.
    A) American call
    B) European call
    C) American put
    D) European put
    E) Neither a Call, nor a Put

28. Martin owns 15,000 shares of stock that he wants to sell sometime within the next three months. Shares of this stock are currently selling for $43.24. The stock has been increasing in price but Martin is concerned the price might start to fall. He is not yet willing to sell his shares just in case the price rises some more. To guarantee that he can receive at least $42.50 a share when he does sell, Martin could purchase _____ with a strike price of $42.50. Assume that each option allows you to trade 100 units of the underlying asset.
    A) 1,500 warrants
    B) 150 calls
    C) 15,000 puts
    D) 1,500 puts
    E) 150 puts

Part II: Problems (30 Points Total)

- **Answer on this document, in the space provided.**
- Show all of your calculations.
- Write clearly! Part marks will be awarded (when deserved).
- Write your final numerical answer in the box provided.

Q1: (8 Points)

Misery Inc. specializes in purchasing the assets of distressed and bankrupt firms and then selling them at a huge profit. Due to its business model, Misery does brisk business during bear markets but it has few opportunities in a booming economy. The correlation between the returns on the market portfolio and Misery stock is $\rho_{i,m} = -0.1$. Misery stock returns have a standard deviation of $\sigma_i = 0.3$ (i.e. 30%) while the variance of the return on the market portfolio is 0.04. The risk free rate equals 5% and the expected return on the market is 10%.

a) (1 Points) Analysts predict that the price of Misery stock will increase to $21 by the end of the year from its current level of $20 per share. If Misery pays no dividends, what return can Misery investors expect based on this forecast?

b) (2 Points) What is the beta of Misery's stock?

c) (3 Points) What is the required return on Misery stock based on its systematic risk? Compare this return to the risk free rate in the market. Comment!

d) (2 Points) Does the expected return calculated in part a) provide adequate compensation for the risk? Is Misery under- or overvalued (or is it correctly priced)?

Q2: (6 Points)

CheapMart Inc. has 9 million shares of common stock outstanding, 0.5 million shares of 7% preferred stock (Face value $100) outstanding, and 120,000 8.5% semiannual bonds outstanding, par value $1000 each. The common stock currently sells for $34 per share and has a beta of 1.20, the preferred stock currently sells for $83 per share, and the bond has 15 years to maturity and sells for $1000. The market risk premium is 10%, T-Bills are yielding 5%, and CheapMart's tax rate is 35%.

a) (2 Points) What is CheapMart's Market value Capital Structure? (Fraction of Market value from Debt, Equity, and Preferred)

b) (4 Points) If CheapMart is evaluating a new investment project that has the same risk as the firm's typical project, what rate should the firm use to discount the project's cash flows?

Q3: (8 Points)

Magnana Inc. is considering a new 4-year project. The project will require purchase of new equipments costing $60,000. After 4 years these can be salvaged for $15,000. The CCA rate is 25%. Revenues are expected to grow at 5% per year, starting with $10,000 in year 1. The expected costs are $5000 per year. Inventory will increase immediately by $10,000. Accounts receivable are expected to be 10% of revenues and accounts payable are expected to be 10% of costs, each year. Assume that all the net working capital will be recaptured in year 4. Magnana,s WACC is estimated at 10% and their tax rate is 30%.

a) (5 Points) What is the present value of the cash flows from the project, excluding CCA tax shields?

b) (2 Points) What is the present value of the CCA tax shields?

c) (1 Point) Should CheapMart take this project? Give reason in support of your answer.

c) **Q3: (8 Points)**

Cheap Shot Guns Inc. stock currently sells for $50 per share.

Important: when drawing payoff or profit diagrams, you need to show the location of each important point on the diagram by writing down the relevant numbers next to each point (i.e. indicate intersections with the horizontal and vertical axes and any points where the payoff/profit function changes abruptly).

a) (3 Points) Consider a European put option on Cheap Shot stock with a strike price of $50 and time to expiration of one year. This option sells for $3. Draw a profit diagram for the writer of this option.

b) (4 Points) Consider a European call option on Cheap Shot stock with a strike price of $50 and time to expiration of one year. This option sells for $5. Your broker suggests the following strategy: buy one European call option and buy one European put option on Cheap Shot stock. As in part a. the put option costs $3, and its strike price is $50. Draw the profit diagram for this strategy. (Make sure your diagram shows the lowest possible profit from this strategy!)

c) (1 Points) Suppose you follow your broker's advice. What needs to happen to the price of Cheap Shot stock in order for you to earn a (positive) profit on your option investment in one year?

Equation List - Comm 308 - Booth-Cleary Text

5.3	Present Value of FV_n : $PV_0 = \frac{FV_n}{(1+k)^n}$
5.4	Future value of an annuity: $FV_n = \frac{PMT}{k}\left[(1+k)^n - 1\right]$
5.5	Present Value of an annuity: $PV_n = \frac{PMT}{k}\left[1 - \frac{1}{(1+k)^n}\right]$
5.8	Present value of perpetuity: $PV_0 = \frac{PMT}{k}$
5.10	Effective rate with continuous compounding: $k = e^{QR} - 1$
5.11	Effective rate: $k = \left(1 + \frac{QR}{m}\right)^{\frac{m}{f}} - 1$
5A-2	Present value of growing perpetuity: $PV_0 = \frac{PMT_0(1+g)}{k-g} = \frac{PMT_1}{k-g}$
5A-4	Present value of growing annuity: $PV_0 = \frac{PMT_1}{k-g}\left[1 - \left(\frac{1+g}{1+k}\right)^n\right]$
6.3	Current Yield: $CY = \frac{Annual\ Interest}{B}$
6.6	Price of T-Bill given BEY: $P = \frac{F}{\left(1 + k_{BEY} \times \frac{n}{365}\right)}$
7.10	Share price with growth opportunities: $P_0 = \frac{EPS_1}{k_c} + PVGO$
7.11	Growth rate: $g = b * ROE$
8.3	Total return = Income yield + Capital gain (loss) yield = $\frac{CF_1}{P_0} + \frac{P_1 - P_0}{P_0}$
8.5	Geometric average (GM) $= \left[(1+r_1)(1+r_2)(1+r_3)\times\ (1+r_n)\right]^{1/n} - 1 = \left(\prod_{i=1}^{n}(1+r_i)\right)^{\frac{1}{n}} - 1$
8.6	Expected return: $ER = \sum_{i=1}^{n}\left(r_i * \text{Prob}_i\right)$
8.7	Ex-post $\sigma = \sqrt{\frac{\sum_{i=1}^{n}\left(r_i - \bar{r}\right)^2}{n-1}}$
8.8	Ex-ante $\sigma = \sqrt{\sum_{i=1}^{n}\left(\text{Prob}_i\right)\left(r_i - ER\right)^2}$
8.9	Expected portfolio return: $ER_p = \sum_{i=1}^{n}\left(w_i * ER_i\right)$
8.11	Portfolio standard deviation: $\sigma_P = \sqrt{\left(w_A\right)^2\left(\sigma_A\right)^2 + \left(w_B\right)^2\left(\sigma_B\right)^2 + 2\left(w_A\right)\left(w_B\right)\left(COV_{A,B}\right)}$
8.12	$COV_{A,B} = \sum_{i=1}^{n}\text{Prob}_i(r_{A,i} - \bar{r_a})(r_{B,i} - \bar{r_b})$

8.14	$COV_{AB} = \rho_{AB}\sigma_A\sigma_B$
8.16	If $\rho_{AB} = -1$, then: $\sigma_P = w\sigma_A - (1-w)\sigma_B$
9.3	$E(R_P) = RF + \left(\frac{E(R_A) - RF}{\sigma_A}\right)\sigma_P$
9.4	Slope of CML $= \frac{ER_M - RF}{\sigma_M}$
9.6	Sharpe Ratio $= \frac{ER_P - RF}{\sigma_P}$
9.7	$\beta_i = \frac{Cov_{i,M}}{\sigma_M^2} = \frac{\rho_{i,M}\sigma_i}{\sigma_M}$
9.8	$\beta_P = w_A\beta_A + w_B\beta_B + \ldots + w_n\beta_n$
9.9	$k_i = RF + (ER_M - RF)\beta_i$
12.2	*Option* Premium $= IV + TV$
12.5	Put Call Parity: $P + S = C + PV(X)$
13.1	$NPV = \frac{CF_1}{(1+k)^1} + \frac{CF_2}{(1+k)^2} + \frac{CF_3}{(1+k)^3} + .. + \frac{CF_n}{(1+k)^n} - CF_0 = \sum_{t=1}^{n}\frac{CF_t}{(1+k)^t} - CF_0$
13.3	$PI = \frac{PV(Cash \text{ inflows})}{PV(Cash \text{ outflows})}$
14.1	$CF_0 = C_0 + \Delta NWC_0 + OC$
14.2	$CF_t = CFBT_t(1-T) + CCA_t(T)$
14.4	$ECF_n = SV_n + \Delta NWC_n$
14.5	$NPV = PV(CF_t) + PV(ECF_n) - CF_0$
14.6	$PV(Operating\ Cash\ Flows) = \frac{CFBT(1-T)}{k}\left[1 - \frac{1}{(1+k)^n}\right]$
14.7	$PV(CCA\ Tax\ Shield) = \frac{(C_0)(d)(T)}{d+k} * \frac{(1+0.5k)}{(1+k)} - \frac{(SV_n)(d)(T)}{d+k} * \frac{1}{(1+k)^n}$
20.8	Cost of Capital: $K_a = \frac{ROI \times IC}{V} = \frac{K_e S + K_d(1-T)D}{V} = K_e\frac{S}{V} + K_d(1-T)\frac{D}{V}$
20.9	$WACC = K_e\frac{S}{V} + K_p\frac{P}{V} + K_i\frac{D}{V}$, Where: $K_i = K_d(1-T)$
20.10	Market value: $S = P_0 \times n$
20.13	Net proceeds: $NP = \frac{I(1-T)}{K_i}\left[1 - \frac{1}{(1+K_i)^n}\right] + F\left(\frac{1}{(1+K_i)^n}\right)$
20.14	Cost of preferred shares: $K_p = D_p \Big/ NP$
20.17	$K_{ne} = \frac{D_1}{NP} + g$
20.21	$K_e = \frac{D_1}{P_0} + g = \frac{X_1(1-b)}{P_0} + b * ROE$
20.27	Cost of new equity: $K_{ne} = K_e * \frac{P_0}{NP}$

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   D) The company should accept the $500 offer as it is worth $18.24 more today.
   E) The company should accept the $500 offer as it is worth $512.42 today.

7. Your banker quotes you two different loan payments on a $12,000 car loan, one calling for 36 monthly payments and the other calling for 24 monthly payments. Both loans have the same APR and EAR. She then tells you that the shorter loan is a better deal because the total payments you would make over the life of the loan would be lower. What is she ignoring?
   A) The payment would be lower on the 24 month loan.
   B) The 24 month contract will actually cost you more in total payments, not less.
   C) The interest you could earn by saving the difference between the two loan payments.
   D) The fact that you must make 12 more payments on the longer term loan.
   E) The APR and EAR for the two loans are irrelevant.

8. In order to help you through college, your parents just deposited $25,000 into a bank account paying 8% interest. Starting tomorrow, you plan to withdraw equal amounts from the account at the beginning of each of the next four years. What is the MOST you can withdraw annually?
   A) $6,125.43
   B) $6,988.91
   C) $7,133.84
   D) $7,548.02
   E) $8,154.71

9. You have found your dream home in Chicoutimi, Quebec. The selling price is $120,000; you will put $20,000 down and obtain a 25-year fixed-rate mortgage at 8.25% for the rest. Although you will get a 25-year mortgage, you plan to prepay the loan by making an additional payment each month along with your regular payment. How much extra must you pay each month if you wish to pay off the loan in 20 years? Canadian Mortgages are quoted as APR compounded semiannually.
   A) $24.56
   B) $54.88
   C) $64.17
   D) $93.28
   E) $106.86

10. Your broker offers you the opportunity to purchase a bond with coupon payments of $90 per year and a face value of $1,000. If the yield to maturity on similar bonds is 8%, this bond should:
    A) Sell for the same price as the similar bond regardless of their respective maturities.
    B) Sell at a premium.
    C) Sell at a discount.
    D) Sell for either a premium or a discount but it's impossible to tell which.
    E) Sell for par value.

11. Suppose you read that a bond with a face value of $1,000 and a coupon of $80 per year has a yield to maturity of exactly 8%. How many years remain until maturity?
    I. Greater than 20 years
    II. Greater than 10 years but less than 20
    III. Less than 10 years
    A) I only
    B) II only
    C) III only
    D) I, II, or III may be correct
    E) Non of the above

12. JM, Inc. just issued 10-year, 8% coupon bonds at par. Outstanding HE Corp. bonds, which have a maturity of 10 years, sell at a premium to par and are viewed by investors as having the same risk as the JM bonds. Therefore, it must be true that:
    A) The coupon rate on the HE bonds is equal to that on the JM bonds.
    B) The coupon rate on the HE bonds is higher than that on the JM bonds.
    C) The coupon payment on the HE bonds is lower than that on the JM bonds.
    D) The yield on HE bonds is higher than the yield on JM bonds.
    E) The HE bonds pay coupons more often than twice a year.

13. As a corporate treasurer, you manage a $100 million bond portfolio. Economists suggest (and you believe) that market interest rates are headed up over the next several months. To reduce interest rate risk you should attempt to:
    I. Reduce the average maturity of the portfolio by selling long-term bonds and buying short-term bonds.
    II. Lengthen the average maturity of the portfolio by buying long-term bonds and selling short-term bonds.
    III. Reduce the average coupon rate by selling high-coupon bonds and buying low-coupon bonds.
    IV. Increase the average coupon rate by buying high-coupon bonds and selling low-coupon bonds.
    A) I only
    B) I and II only
    C) II and III only
    D) I and IV only
    E) I, II, III, and IV

14. Jamie owes $21,750 at a 5% rate of interest. The minimum amount that she must pay monthly is $230.69. How much faster can she pay off this loan if she makes monthly payments of $300.00?
    A) 1.68 years sooner
    B) 2.54 years sooner
    C) 2.79 years sooner
    D) 2.93 years sooner
    E) 3.01 years sooner

15. Alhandro, Inc. just paid an annual dividend of $1.03. They have been increasing their dividends by 4% annually and are expected to continue doing so. How much can they expect to receive for each new share of stock offered if investors require an 11% rate of return?
    A) $9.36
    B) $9.74
    C) $14.71
    D) $15.30
    E) $15.91

16. If the required return is zero, then:
    A) The payback period exceeds the discounted payback period.
    B) The NPV equals the difference between the sum of the undiscounted future cash flows and the initial cost.
    C) If the NPV is negative, the IRR will be greater than zero.
    D) The PI will be less than one.
    E) The project will be acceptable according to the AAR criteria.

17. You discover the engine-oil additive your scientists developed three years ago makes a great men's after-shave once diluted properly using certain chemicals. How should you treat the original $125,000 of R&D expenditures that went into developing the engine-oil additive for your present decision regarding whether or not to begin production of the after-shave?
    A) Treat it as a cash outflow three years ago for the current project; that is, find the future value today of the $125,000 spent three years ago.
    B) The full $125,000 should be treated as an initial investment today.
    C) As a cash inflow since the formula has obviously increased in value over the years.
    D) As an opportunity cost if the formula cannot presently be sold to another manufacturer.
    E) As a sunk cost since the R&D expenditure has no bearing on today's decision.

18. You have a portfolio consisting of equal amounts of IBM stock and Treasury bills. If you replace half of the Treasury bills with more IBM stock, the portfolio expected return will likely _____ and its risk will likely_____, all else the same.
    A) increase, increase
    B) decrease, increase
    C) increase, decrease
    D) decrease, decrease
    E) either increase or decrease, either increase or decrease

19. The principle of diversification states that spreading an investment over a number of assets will eliminate:
    A) All of the risk.
    B) All of the systematic risk and part of the unsystematic risk.
    C) All of the unsystematic risk and part of the systematic risk.
    D) Most of the systematic risk.
    E) Most of the unsystematic risk.

20. Marge Cosmetics just announced that earnings for the first quarter of the current year grew at an annualized rate of 3%, well above the rate for the same quarter the previous year. Upon the announcement, the stock price did not change. (The market in general was also unchanged). Which of the following is most likely correct?
    A) Marge's price didn't change since the market was surprised by the announcement.
    B) Interest rates in the economy must have increased.
    C) Marge's price didn't change because investors likely anticipated the news release.
    D) Marge's price didn't change because the market in general was unchanged.
    E) Marge must have a beta coefficient equal to 1.

21. Which of the following is correct regarding the CAPM?
    A) The expected return for a particular asset depends on the pure time value of money as measured by beta
    B) The expected return for a particular asset depends on the amount of systematic risk as measured by the risk free rate
    C) The standard deviation for a particular asset depends on the reward for bearing risk as measured by beta
    D) Implicit in the CAPM is that all risky assets have the same reward to risk ratio
    E) The SML and CAPM illustrate that the higher the beta, the lower the expected return

22. Standard deviation measures the ____ risk and beta measures the ____ risk of a portfolio.
    A) Unsystematic; systematic
    B) Systematic; unsystematic
    C) Unsystematic; total
    D) Total; unsystematic
    E) Total; systematic

23. Suppose the Bank of Canada increased the rate on T-bills. As a result of this action, the security market line of a risky individual security would:
    A) Remain constant.
    B) Have an increased slope.
    C) Have a decreased slope.
    D) Increase in a parallel manner.
    E) Decrease in a parallel manner.

24. What is the expected return on a portfolio that is invested 40% in stock A and 60% in stock B, given the following information?

Economic State	Probability of State	Return on Stock A	Return on Stock B
Normal	70%	12%	5%
Recession	30%	-10%	8%

    A) 5.40%
    B) 5.70%
    C) 6.40%
    D) 7.80%
    E) 8.10%

25. What is the beta of the following portfolio?

Stock	A	B	C
Amount Invested	$5,000	$10,000	$15,000
Stock Beta	1.20	1.80	0.70

    A) .98
    B) 1.15
    C) 1.19
    D) 1.21
    E) 1.23

26. A firm's WACC is applicable to those projects that:
    A) Are considered within one year of the date of the information used in the WACC computation.
    B) Are similar in risk to the current operations of the firm.
    C) Represent new avenues of business for the firm.
    D) Payback within the required period of time.
    E) Are pure plays in new areas of business.

27. A local retail store allows you to return the merchandise you purchase and get your money back for up to 30 days after the purchase date. The store has, in effect, provided each shopper with _____ options.
    A) American call
    B) European call
    C) American put
    D) European put
    E) Neither a Call, nor a Put

28. Martin owns 15,000 shares of stock that he wants to sell sometime within the next three months. Shares of this stock are currently selling for $43.24. The stock has been increasing in price but Martin is concerned the price might start to fall. He is not yet willing to sell his shares just in case the price rises some more. To guarantee that he can receive at least $42.50 a share when he does sell, Martin could purchase _____ with a strike price of $42.50. Assume that each option allows you to trade 100 units of the underlying asset.
    A) 1,500 warrants
    B) 150 calls
    C) 15,000 puts
    D) 1,500 puts
    E) 150 puts

Part II: Problems (30 Points Total)

- **Answer on this document, in the space provided.**
- Show all of your calculations.
- Write clearly! Part marks will be awarded (when deserved).
- Write your final numerical answer in the box provided.

Q1: (8 Points)

Misery Inc. specializes in purchasing the assets of distressed and bankrupt firms and then selling them at a huge profit. Due to its business model, Misery does brisk business during bear markets but it has few opportunities in a booming economy. The correlation between the returns on the market portfolio and Misery stock is $\rho_{i,m} = -0.1$. Misery stock returns have a standard deviation of $\sigma_i = 0.3$ (i.e. 30%) while the variance of the return on the market portfolio is 0.04. The risk free rate equals 5% and the expected return on the market is 10%.

a) (1 Points) Analysts predict that the price of Misery stock will increase to \$21 by the end of the year from its current level of \$20 per share. If Misery pays no dividends, what return can Misery investors expect based on this forecast?

$$\frac{\$21 - \$20}{\$20} = 5\%$$

b) (2 Points) What is the beta of Misery's stock?

$$\beta = \frac{\rho \times \sigma_{Misery}}{\sigma_{Mkt}} = \frac{-0.1 \times 0.3}{\sqrt{0.04}} = -0.15$$

c) (3 Points) What is the required return on Misery stock based on its systematic risk? Compare this return to the risk free rate in the market. Comment!

From CAPM: $E\left(r_{Misery}\right) = 5\% + \left(-0.15\right)\left(10\% - 5\%\right) = 4.25\%$ (2 Points)

Due to its negative correlation with the market (negative beta), Misery stock helps investors reduce risk (benefits of diversification are large), therefore investors will require a low return (even below the risk free return). (1 Point)

d) (2 Points) Does the expected return calculated in part a) provide adequate compensation for the risk? Is Misery under- or overvalued (or is it correctly priced)?

$$5\% > 4.25\%$$

The 5% return based on the forecast provides more than adequate compensation for the risk. Based on the systematic risk investors would only require 4.25%.

Therefore, Misery is undervalued ➔ its price is expected to increase if forecast in the question is correct.

Q2: (6 Points)

CheapMart Inc. has 9 million shares of common stock outstanding, 0.5 million shares of 7% preferred stock (Face value $100) outstanding, and 120,000 8.5% semiannual bonds outstanding, par value $1000 each. The common stock currently sells for $34 per share and has a beta of 1.20, the preferred stock currently sells for $83 per share, and the bond has 15 years to maturity and sells for $1000. The market risk premium is 10%, T-Bills are yielding 5%, and CheapMart's tax rate is 35%.

a) (2 Points) What is CheapMart's Market value Capital Structure? (Fraction of Market value from Debt, Equity, and Preferred)

	# outstanding	Price	Value	% of firm value
Common Stock	9,000,000	$ 34.00	$ 306,000,000.00	65.45%
Preferred Stock	500,000	$ 83.00	$ 41,500,000.00	8.88%
Bonds	120,000	$ 1,000.00	$ 120,000,000.00	25.67%
Firm value			$ 467,500,000.00	

(0.5 points for each weight. 2 points if everything correct)

b) (4 Points) If CheapMart is evaluating a new investment project that has the same risk as the firm's typical project, what rate should the firm use to discount the project's cash flows?

$$WACC = \frac{E}{V} \times k_E + \frac{P}{V} \times k_P + \frac{D}{V} \times k_D \times (1 - T)$$

$$\frac{E}{V} = 65.45\%, \quad \frac{P}{V} = 8.88\%, \quad \frac{D}{V} = 25.67\%$$

$$k_E = 0.05 + 1.2 \times 0.1 = 17.00\%$$ .....(1 Point)

$$k_D = \left(1 + \frac{0.085}{2}\right)^2 - 1 = 8.68\%$$ .....(1 Point)

$$k_P = \frac{D}{P} = \frac{7}{83} = 8.43\%$$ .....(1 Point)

$$T = 35\%$$

$$WACC = 13.32\%$$ .....(1 Point)

Q3: (8 Points)

Magnana Inc. is considering a new 4-year project. The project will require purchase of new equipments costing $60,000. After 4 years these can be salvaged for $15,000. The CCA rate is 25%. Revenues are expected to grow at 5% per year, starting with $10,000 in year 1. The expected costs are $5000 per year. Inventory will increase immediately by $10,000. Accounts receivable are expected to be 10% of revenues and accounts payable are expected to be 10% of costs, each year. Assume that all the net working capital will be recaptured in year 4. Magnana,s WACC is estimated at 10% and their tax rate is 30%.

a) (5 Points) What is the present value of the cash flows from the project, excluding CCA tax shields?

	0	1	2	3	4
Sales		$ 10,000.00	$ 10,500.00	$ 11,025.00	$ 11,576.25
Cost		$ 5,000.00	$ 5,000.00	$ 5,000.00	$ 5,000.00
S-C		$ 5,000.00	$ 5,500.00	$ 6,025.00	$ 6,576.25
(S-C)(1-T)		$ 3,500.00	$ 3,850.00	$ 4,217.50	$ 4,603.38
Inventory	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ 10,000.00
Accounts receivables		$ 1,000.00	$ 1,050.00	$ 1,102.50	$ 1,157.63
Accounts Payables		$ 500.00	$ 500.00	$ 500.00	$ 500.00
NWC	$ 10,000.00	$ 10,500.00	$ 10,550.00	$ 10,602.50	$ 10,657.63
Change(NWC)	-$ 10,000.00	-$ 500.00	-$ 50.00	-$ 52.50	-$ 55.13
Recapture					$ 10,657.63
Net new investment & Salvage	-$ 60,000.00				$ 15,000.00
	-$ 70,000.00	$ 3,000.00	$ 3,800.00	$ 4,165.00	$ 30,205.88
PV	-$ 70,000.00	$ 2,727.27	$ 3,140.50	$ 3,129.23	$ 20,631.02

Total Present value of the cash flows excluding CCA Tax shields = -$ 40,371.99

```
NWC, change in NWC, and Recapture correctly accounted ... (1 Points)
Sales and Costs correctly accounted for ................. (1 Point)
New Investment and Salvage correctly accounted for ...... (1 Point)
All Cash Flows correct ... ( 1 Point)
Present Value ...... (1 Point)
```

b) (2 Points) What is the present value of the CCA tax shields?

$$PV(CCA\ Tax\ Shield) = \frac{(C_0)(d)(T)}{d+k} * \frac{(1+0.5k)}{(1+k)} - \frac{(SV_n)(d)(T)}{d+k} * \frac{1}{(1+k)^n}$$

$$C_0 = \$60,000, d = 25\%, T = 30\%, k = 10\%, SV_n = \$15,000, n = 4$$

$$PV(CCA\ Tax\ Shield) = \$10,077.33$$

c) (1 Point) Should CheapMart take this project? Give reason in support of your answer.

NPV = -$ 40,371.99 + $ 10,077.33 <0
Reject the project.

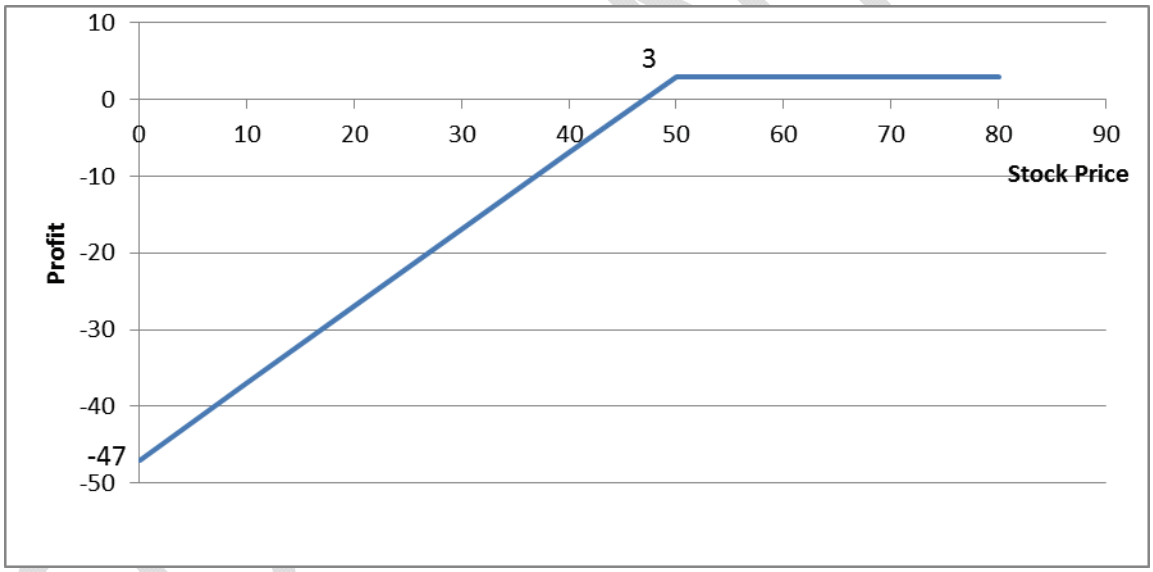
c) **Q3: (8 Points)**

Cheap Shot Guns Inc. stock currently sells for $50 per share.

Important: when drawing payoff or profit diagrams, you need to show the location of each important point on the diagram by writing down the relevant numbers next to each point (i.e. indicate intersections with the horizontal and vertical axes and any points where the payoff/profit function changes abruptly).

a) (3 Points) Consider a European put option on Cheap Shot stock with a strike price of $50 and time to expiration of one year. This option sells for $3. Draw a profit diagram for the writer of this option.

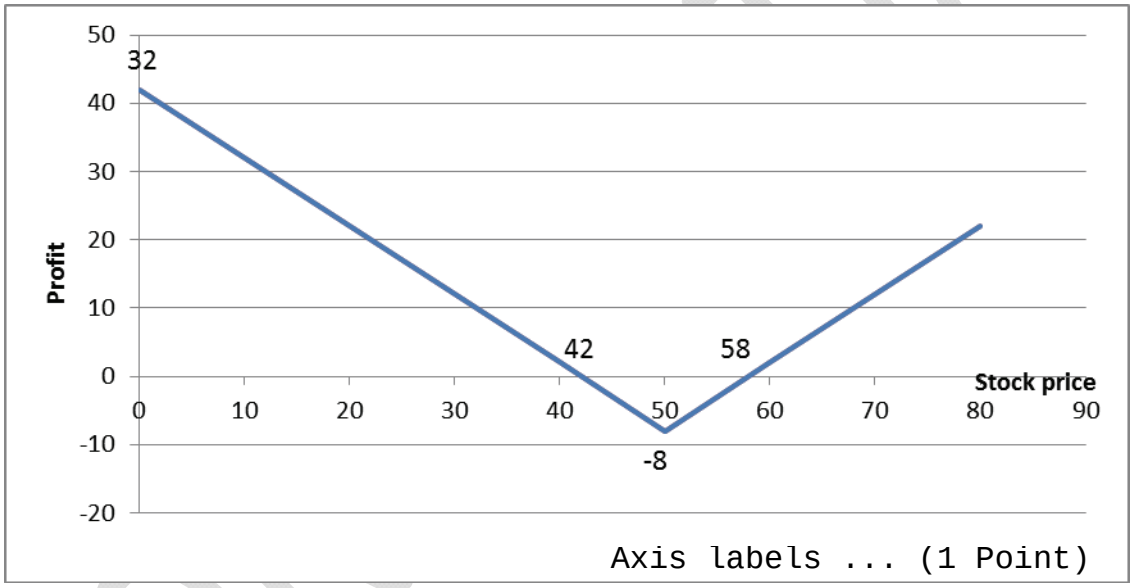
For a European put option with strike price of $50 and a premium of $3, the profit function of the option writer equals to: $\Pi = 3 - Max(50 - P, 0)$. The graph of this function is:




```
Axis labels .... (1 Point)
Identifying 5 and 45 (1 Point)
Overall Shape (1 Point)
```

b) (4 Points) Consider a European call option on Cheap Shot stock with a strike price of $50 and time to expiration of one year. This option sells for $5. Your broker suggests the following strategy: buy one European call option and buy one European put option on Cheap Shot stock. As in part a. the put option costs $3, and its strike price is $50. Draw the profit diagram for this strategy. (Make sure your diagram shows the lowest possible profit from this strategy!)

The profit function for the buyer of the put option with a strike price of $50 and a premium of $3 is $\Pi_{put} = Max(50-P,0)-3$. The profit function for the holder of the call option given in part (a) is $\Pi_{call} = Max(P-50,0)-5$. The profit function of the strategy outlined is the sum of these two profit functions. Thus: $\Pi_{strategy} = Max(P-50,0)+Max(50-P,0)-8$



Axis labels ... (1 Point)
32, -8, 48 .... (2 Points)
Overall shape ... (1 Point)

c) (1 Points) Suppose you follow your broker's advice. What needs to happen to the price of Cheap Shot stock in order for you to earn a (positive) profit on your option investment in one year?

The price of the stock should be either above $58 or below $42

Equation List - Comm 308 - Booth-Cleary Text

5.3	Present Value of FV_n : $PV_0 = \frac{FV_n}{(1+k)^n}$
5.4	Future value of an annuity: $FV_n = \frac{PMT}{k}\left[(1+k)^n - 1\right]$
5.5	Present Value of an annuity: $PV_n = \frac{PMT}{k}\left[1 - \frac{1}{(1+k)^n}\right]$
5.8	Present value of perpetuity: $PV_0 = \frac{PMT}{k}$
5.10	Effective rate with continuous compounding: $k = e^{QR} - 1$
5.11	Effective rate: $k = \left(1 + \frac{QR}{m}\right)^{\frac{m}{f}} - 1$
5A-2	Present value of growing perpetuity: $PV_0 = \frac{PMT_0(1+g)}{k-g} = \frac{PMT_1}{k-g}$
5A-4	Present value of growing annuity: $PV_0 = \frac{PMT_1}{k-g}\left[1 - \left(\frac{1+g}{1+k}\right)^n\right]$
6.3	Current Yield: $CY = \frac{Annual\ Interest}{B}$
6.6	Price of T-Bill given BEY: $P = \frac{F}{\left(1 + k_{BEY} \times \frac{n}{365}\right)}$
7.10	Share price with growth opportunities: $P_0 = \frac{EPS_1}{k_c} + PVGO$
7.11	Growth rate: $g = b * ROE$
8.3	Total return = Income yield + Capital gain (loss) yield = $\frac{CF_1}{P_0} + \frac{P_1 - P_0}{P_0}$
8.5	Geometric average (GM) $= \left[(1+r_1)(1+r_2)(1+r_3)\times\ (1+r_n)\right]^{1/n} - 1 = \left(\prod_{i=1}^{n}(1+r_i)\right)^{\frac{1}{n}} - 1$
8.6	Expected return: $ER = \sum_{i=1}^{n}\left(r_i * \text{Prob}_i\right)$
8.7	Ex-post $\sigma = \sqrt{\frac{\sum_{i=1}^{n}\left(r_i - \bar{r}\right)^2}{n-1}}$
8.8	Ex-ante $\sigma = \sqrt{\sum_{i=1}^{n}\left(\text{Prob}_i\right)\left(r_i - ER\right)^2}$
8.9	Expected portfolio return: $ER_p = \sum_{i=1}^{n}\left(w_i * ER_i\right)$
8.11	Portfolio standard deviation: $\sigma_P = \sqrt{\left(w_A\right)^2\left(\sigma_A\right)^2 + \left(w_B\right)^2\left(\sigma_B\right)^2 + 2\left(w_A\right)\left(w_B\right)\left(COV_{A,B}\right)}$
8.12	$COV_{A,B} = \sum_{i=1}^{n}\text{Prob}_i(r_{A,i} - \bar{r_a})(r_{B,i} - \bar{r_b})$

8.14	$COV_{AB} = \rho_{AB}\sigma_A\sigma_B$
8.16	If $\rho_{AB} = -1$, then: $\sigma_P = w\sigma_A - (1-w)\sigma_B$
9.3	$E(R_P) = RF + \left(\frac{E(R_A) - RF}{\sigma_A}\right)\sigma_P$
9.4	Slope of CML $= \frac{ER_M - RF}{\sigma_M}$
9.6	Sharpe Ratio $= \frac{ER_P - RF}{\sigma_P}$
9.7	$\beta_i = \frac{Cov_{i,M}}{\sigma_M^2} = \frac{\rho_{i,M}\sigma_i}{\sigma_M}$
9.8	$\beta_P = w_A\beta_A + w_B\beta_B + \ldots + w_n\beta_n$
9.9	$k_i = RF + (ER_M - RF)\beta_i$
12.2	*Option* Premium $= IV + TV$
12.5	Put Call Parity: $P + S = C + PV(X)$
13.1	$NPV = \frac{CF_1}{(1+k)^1} + \frac{CF_2}{(1+k)^2} + \frac{CF_3}{(1+k)^3} + \mathsf{K} + \frac{CF_n}{(1+k)^n} - CF_0 = \sum_{t=1}^{n}\frac{CF_t}{(1+k)^t} - CF_0$
13.3	$PI = \frac{PV(Cash \text{ inflows})}{PV(Cash \text{ outflows})}$
14.1	$CF_0 = C_0 + \Delta NWC_0 + OC$
14.2	$CF_t = CFBT_t(1-T) + CCA_t(T)$
14.4	$ECF_n = SV_n + \Delta NWC_n$
14.5	$NPV = PV(CF_t) + PV(ECF_n) - CF_0$
14.6	$PV(Operating\ Cash\ Flows) = \frac{CFBT(1-T)}{k}\left[1 - \frac{1}{(1+k)^n}\right]$
14.7	$PV(CCA\ Tax\ Shield) = \frac{(C_0)(d)(T)}{d+k} * \frac{(1+0.5k)}{(1+k)} - \frac{(SV_n)(d)(T)}{d+k} * \frac{1}{(1+k)^n}$
20.8	Cost of Capital: $K_a = \frac{ROI \times IC}{V} = \frac{K_e S + K_d(1-T)D}{V} = K_e\frac{S}{V} + K_d(1-T)\frac{D}{V}$
20.9	$WACC = K_e\frac{S}{V} + K_p\frac{P}{V} + K_i\frac{D}{V}$, Where: $K_i = K_d(1-T)$
20.10	Market value: $S = P_0 \times n$
20.13	Net proceeds: $NP = \frac{I(1-T)}{K_i}\left[1 - \frac{1}{(1+K_i)^n}\right] + F\left(\frac{1}{(1+K_i)^n}\right)$
20.14	Cost of preferred shares: $K_p = D_p \Big/ NP$
20.17	$K_{ne} = \frac{D_1}{NP} + g$
20.21	$K_e = \frac{D_1}{P_0} + g = \frac{X_1(1-b)}{P_0} + b * ROE$
20.27	Cost of new equity: $K_{ne} = K_e * \frac{P_0}{NP}$

Print Last Name: ➔	**Print First Name:** ➔	**ID Number:** ➔	
COURSE FINANCE	**NUMBER** COMM 308	**SECTIONS: (➔ Circle your section)** CC, DD, F, G, H, I	
EXAMINATION Final Exam **VERSION BLUE**	**DATE** April 14, 2011	**TIME** 3 hours 19:00 – 22:00	**# OF PAGES 18** including cover
INSTRUCTOR: **(➔ Underline your instructor's name)** Nabil El Meslmani Ravi Mateti Reena Atanasiadis David Newton Stephen Wong		**DIVISION** John Molson School of Business Concordia University	

READ THESE SPECIAL INSTRUCTIONS CAREFULLY

- You must submit a BLUE computer answer sheet.

- For Multiple Choice Questions,
All answers must be recorded IN PENCIL on the computer sheet.
- For Problems:
All answers must be recorded IN INK within this exam.
Show your calculations to earn part marks. Write in the space provided.
- If you are using the back of the exam for answering any question, you should label it clearly

- Please ensure you have 18 pages (including the cover page) in this exam.

- Fill in your name and other required information IN PENCIL on the Computer Answer sheet as well as IN INK on this cover sheet.

- Blank questions or those with multiple answers will not receive credit.

SCORES (FOR INTERNAL USE ONLY)

Part I Multiple Choice Questions	**Part II Long Answer Questions**				
	Question 1	Question 2	Question 3	Question 4	
(Max: 70 Points)	(Max: 7 Points)	(Max: 11 Points)	(Max: 6 Points)	(Max: 6 Points)	**Total**

Part I: Multiple Choice Questions (28 Questions, 70 Points Total):

- This part consists of 28 Multiple Choice Questions.
- Each question counts 2.5 points for a total of 70 points.
  - **Only answers on the computer answer sheet will be graded.**
  - **Use a pencil to mark your answers on the Computer Sheet.**

1. Which of the following help ensure managers act in the best interest of owners?
   I. Compensation package for managers that ties their salary to the firm's share price.
   II. Managers are promoted only if the firm prospers.
   III. The threat that if the firm does poorly, shareholders will use a proxy fight to replace the existing management.
   IV. There is a high degree of likelihood the firm will become a takeover candidate if the firm performs poorly.

   A) I and II only
   B) II and III only
   C) I, III, and IV only
   D) I, II, and III only
   E) I, II, III, and IV

2. A firm has recently purchased Class 10 equipment for $100,000 with a CCA rate of 30%. What is the amount of depreciation that the firm can claim as a tax-deductible expense in the second year?

   A) $30,000
   B) $15,000
   C) $42,000
   D) $25,500
   E) $45,000

3. James plans on saving money to buy his dream car. He is opening an account today with a deposit of $15,000 and expects to earn 4% interest (effective annual rate). After 3 years, he will add an additional $50,000 to the account. If the account continues to earn 4% EAR, how much money will James have in his account five years from now?

   A) $65,000.00
   B) $67,600.00
   C) $72,000.00
   D) $72,329.79
   E) $79,082.44

4. Simpsons, Inc. invested $1.325 million in a project that earned an 8.25% rate of return (effective annual rate). Sampson sold their investment for $3,713,459. How much sooner could Simpsons have sold the company if they only wanted $3 million from the project?

   A) 2.69 years
   B) 3.33 years
   C) 5.17 years
   D) 6.67 years
   E) 10.31 years

5. The greater the number of years, the:

   A) Smaller the future value of a single sum.
   B) Larger the present value of a single sum.
   C) Greater the compounding effect.
   D) None of the above.
   E) Insufficient information.

6. XYZ shares are selling for $55.00. The 2 year put option on XYZ shares has the following characteristics: strike = 50, price = $0.25. Given that the risk free rate is 2%, what is the price of a 2 year call option on XYZ shares with an exercise price of 50?

   A) 5.25
   B) 7.19
   C) -4.75
   D) $0.25
   E) 0

7. Jack and Jill both want to have $5,000 in three years. Jack expects to earn 8% on his investments and Jill expects a 7% rate of return. Which one of the following statements is correct concerning the amount of money they each need to invest today?

   A) Jill needs to deposit $112.33 more than Jack today.
   B) Jill needs to deposit $173.33 more than Jack today.
   C) Jack needs to deposit $3,699.16 today.
   D) Jill needs to deposit $3,081.49 today.
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8. You own a furniture store. You normally sell a living room set for $2,500 and finance the full purchase price for 30 monthly payments at 24% APR (compounded monthly). You are planning to run a zero-interest financing sale during which you will finance the set over 30 months at 0% interest. What should be your selling price during the zero-interest financing sale such that you are able to earn your usual combined return on the sale and the financing? Assume all payments are made at the end of the month.

    A) $ 2,500.00
    B) $ 3,100.00
    C) $ 3348.74
    D) $4528.41
    E) $128.43

9. Strapped for cash, your acquaintance Mr. John Doe makes you the following offer. He would like to borrow $10,000 today. He will repay the $10,000 by making yearly payments with the first payment being for $1,000 at the end of this year. The payments will grow by 10% every year thereafter. If the appropriate discount rate is 12% (effective annual rate), how long will it take for Mr. Doe to repay the loan?

    A) 12.38 years
    B) 10 years
    C) 13.28 years
    D) 18.32 years
    E) 21.38 years

10. Given a fixed stream of monthly income the:

    A) Present value will increase as the time period increases.
    B) Future value will decrease as the time period increases.
    C) Present value will decrease as the annual percentage rate decreases.
    D) Future value will increase as the annual percentage rate decreases.
    E) Future value will increase if payments are made at the end of the period rather than the beginning.

11. Thomas wants to save $1,200 a year in a manner that maximizes his savings. To do this, he should:

    A) Deposit $1,200 into his savings account on the last day of each year.
    B) Treat his $100 monthly savings deposits as an annuity due.
    C) Treat his $100 monthly savings deposits as an ordinary annuity.
    D) Deposit $300 into his account at the end of each quarter.
    E) Deposit $600 into his account at the end of every six month period.

12. Which of the following statements are correct concerning interest rate risk?

I. The shorter the term, the greater the interest rate risk.
II. The longer the term, the greater the interest rate risk.
III. The lower the coupon rate, the greater the interest rate risk.
IV. The higher the coupon rate, the higher the interest rate risk.

A) I and III only
B) I and IV only
C) II and III only
D) II and IV only
E) Insufficient Information.

13. Which of the following is (are) true concerning bond prices?

I. A discount bond will be priced closer and closer to face value as the time to maturity decreases, all else equal.
II. A premium bond will be priced closer and closer to face value as the time to maturity decreases, all else equal.
III. A bond's price reflects the bond's rating and time to maturity.
IV. A bond's price will decrease as interest rates increase.

A) I and IV only
B) II and III only
C) II and IV only
D) I, III, and IV only
E) I, II, III, and IV

14. Given no change in required returns, the price of a stock whose dividend is constant will:

A) Increase over time at a rate of r%.
B) Decrease over time at a rate of r%.
C) Increase over time at a rate equal to the dividend growth rate.
D) Decrease over time at a rate equal to the dividend growth rate.
E) Remain unchanged.

15. The Jane Doe Inc. bonds are currently selling for $1,003.17. These bonds mature in three years, pay coupons annually, and have a yield-to-maturity of 6.63%. What is the coupon rate?

A) 6.50%
B) 6.60%
C) 6.63%
D) 6.75%
E) 6.90%

16. If two stocks have the same earnings per share and required rate of return, differences in the _____ of the two companies can account for different stock prices.

A) voting rights
B) growth opportunities
C) number of shares outstanding
D) number of directors
E) value of preferred stock

17. It is more difficult to value a stock than it is to value a bond because:

I. The future cash flows of equity are known.
II. Future cash flows of bonds are known
III. The life of an equity security is unlimited.
IV. The required market rate of return on a stock is known in advance.

A) I
B) II
C) I and III
D) II and III
E) II, III and IV

18. A company has a market-to-book ratio that is greater than 1.0. If this company uses book value of equity to determine their WACC, they will derive a value that is _____ the market based WACC. because _____

A) Equivalent to; the ratio of debt to equity is the same whether book values or market values are used.
B) Greater than; the ratio of debt to equity will be greater than if the ratio was based on market values.
C) Greater than; the ratio of debt to equity will be less than if the ratio was based on market values.
D) Less than; the ratio of debt to equity will be greater than if the ratio was based on market values.
E) Less than; the ratio of debt to equity will be less than if the ratio was based on market values.

19. Deep Pockets Mining unexpectedly discovered an extremely rich vein of gold. Which of the following types of stakeholder owns the increased profits that will be generated from this find?

I. Preferred shareholders
II. Bond holders
III. Common shareholders

A) I only
B) II only
C) III only
D) I, and III only
E) I, II, and III

20. Suppose that sales and profits of Ollie Enterprises are growing at a rate of 30% per year. At the end of four years the growth rate will drop to a steady 4%. At the end of year 5, Ollie will issue its first dividend in the amount of $2 per share. If the required return is 16%, what is the value of a share of stock? Assume dividends grow at the same rate as earnings after year 4.

A) $7.49
B) $7.67
C) $8.17
D) $9.20
E) $9.91

21. The Battery Co. paid $1.20 in dividends last year. Last year Margaret paid a price of $15.00 a share for Battery Co. stock and she has an expected return of 8% on this investment. What is the growth rate of the Battery Co. stock?

A) 0%
B) 4%
C) 8%
D) 12%
E) 16%

22. The internal rate of return on a project is 11.24%. Which of the following (is) are true if the project is assigned a 9.5% discount rate?

I The project will have a negative net present value.
II The profitability index will be greater than 1.0.
III The initial investment is less than the market value of the project.
IV The project will have a positive effect on shareholders if it is accepted.

A) I only
B) II and IV only
C) I and III only
D) II and III only
E) II, III, and IV only

23. If portfolio weights are positive: 1) Can the return on a portfolio ever be less than the smallest return on an individual security in the portfolio? 2) Can the variance of a portfolio ever be less than the smallest variance of an individual security in the portfolio?

A) 1) yes; 2) yes
B) 1) yes; 2) no
C) 1) no; 2) yes
D) 1) no; 2) no
E) 1) maybe; 2) no

24. Which of the following are examples of systematic risk?

I. An increase in the rate of GDP growth
II. An increase in the productivity of ABC Co. workers
III. A decrease in the rate of inflation
IV. A decrease in a firm's cost of borrowing

A) I and II only
B) I and III only
C) II and IV only
D) II and III only
E) I, III, and IV only

25. An asset that has an expected rate of return above the security market line:

A) Is overpriced.
B) Is underpriced.
C) Is less risky than the market.
D) Has a beta greater than 1.
E) Has a standard deviation equal to 0.

26. A firm is considering a project that is virtually risk-free. The company has a beta of 1.3 and a debt-equity ratio of .4. The appropriate discount rate to use in analyzing this project is:

A) The firm's current WACC.
B) Required rate of return based on a beta of 1.3.
C) The cost of equity capital.
D) The Treasury bill rate.
E) Zero.

27. An increase in which of the following will increase the value of a call option?

I. Underlying stock price
II. Exercise price
III. Time to expiration
IV. Variance of the return on the underlying asset

A) III and IV only
B) I and III only
C) II and IV only
D) I, III, and IV
E) I, II, III, and IV

28. You discover that you can make greater than expected returns by buying stock in firms whenever the growth rate in sales predicted by an investment survey exceeds the stock's current price-earnings ratio. Which of the following describes this event?

A) This would not be a violation of market efficiency.
B) This would be a violation of weak form efficiency.
C) This would be a violation of semi-strong form efficiency but not of weak form efficiency.
D) This would be a violation of strong form efficiency but not of semi-strong form efficiency.
E) This would be a violation of all forms of market efficiency.

Part II: Problems (30 Points Total)

- **Answer on this document, in the space provided.**
- Show all of your calculations.
- Write clearly! Part marks will be awarded (when deserved).

Q1: (7 Points)

Elbonia Mudworks capital structure is as follows:

Debt: 4,000 10-year, 8% semi-annual coupon bonds (4% coupon every 6 months) priced at par (face value = $1,000), Common stock: 50,000 shares outstanding, price = $62 and $\beta = 1.1$, Preferred stock: 9,000 shares of 4% preferred stock outstanding, price = $60 (face value = $100). Assume that the market premium is currently at 5% and the short-term government of Canada bills are yielding 6%

Elbonia is considering investing in a new project. The new project is similar in risk to the current operations of the firm. The project is for 4 years and it will require an investment of $100,000 in new equipment. The CCA rate is 25% and the tax rate is 35%. Elbonia's management has estimated the IRR of the new project to be 10%.

Should the firm accept the new project? Support your answer with calculations and/or reasoning.

Q2: (11 Points)

You are a recycler of spent plutonium rods from nuclear reactors, and a new government mandate requires you to purchase a filtration system for your wastewater. You can choose between two machines:

Machine 1 has a four-year life and costs 1,200,000. It has an annual pre-tax operating cost of $100,000 in the first year. Operating costs are expected to increase at a rate of 5% per year over the life of machine.

Machine 2 has a six-year life costs $720,000. It has an annual pre-tax operating cost of $80,000 in the first year. The operating costs for the second machine are expected to increase at the rate of 8% per year over the life of the machine.

You do not foresee any further changes in environmental laws or changes in water filtration technology. Both machines have zero salvage values. Both machines belong to CCA class 22 with a depreciation rate of 50%. The corporate tax rate is 34% and the appropriate discount rate is 12%.

a) (2.5 point) What is the NPV of investing in Machine 1?

b) (2.5 point) What is the NPV of investing in Machine 2?

c) (2 point) What is machine 1's EANPV?

d) (2 point) What is machine 2's EANPV?

e) (1 point) Which machine should you buy?

f) (1 points) Do you need your results from c. and d. in order to answer question e? Why or why not?

Q3: (6 Points)

Important: when drawing payoff or profit diagrams, you need to show the location of each important point on the diagram by writing down the relevant numbers next to each point (i.e. indicate intersections with the horizontal and vertical axes and any points where the payoff/profit function changes abruptly).

Consider a portfolio composed of two options written on the same stock:

- Short one European call option with a strike price $50
- Long one European put option with a strike price $50

With both options maturing at date T.

a) (5 Points) What is the payoff of this portfolio at date T? Draw the payoff diagram.

b) (1 Point) Name one financial asset that has the same payoff as the above portfolio?

Q4: (6 Points) Short Answers:

a) (2 points) Suppose you own 100 shares of IBM stock, which you intend to sell today. Since you will sell it in the secondary market, IBM will receive no direct cash flows as a consequence of your sale. Why, then, should IBM's management care about the price you get for your shares?

b) (2 points) Since debt is typically a cheaper source of financing than is equity, why don't firms use as close to 100% debt financing as possible?

c) (2 points) Your friend argues that trading on insider information should be made legal because trading by insiders will make the market strong form efficient. Argue against this reasoning.

Equation List - Comm 308 - Booth-Cleary Text

5.3	Present Value of FV_n : $PV_0 = \frac{FV_n}{(1+k)^n}$
5.4	Future value of an annuity: $FV_n = \frac{PMT}{k}\left[(1+k)^n - 1\right]$
5.5	Present Value of an annuity: $PV_n = \frac{PMT}{k}\left[1 - \frac{1}{(1+k)^n}\right]$
5.8	Present value of perpetuity: $PV_0 = \frac{PMT}{k}$
5.10	Effective rate with continuous compounding: $k = e^{QR} - 1$
5.11	Effective rate: $k = \left(1 + \frac{QR}{m}\right)^{\frac{m}{f}} - 1$
5A-2	Present value of growing perpetuity: $PV_0 = \frac{PMT_0(1+g)}{k-g} = \frac{PMT_1}{k-g}$
5A-4	Present value of growing annuity: $PV_0 = \frac{PMT_1}{k-g}\left[1 - \left(\frac{1+g}{1+k}\right)^n\right]$
6.3	Current Yield: $CY = \frac{Annual\ Interest}{B}$
6.6	Price of T-Bill given BEY: $P = \frac{F}{\left(1 + k_{BEY} \times \frac{n}{365}\right)}$
7.10	Share price with growth opportunities: $P_0 = \frac{EPS_1}{k_c} + PVGO$
7.11	Growth rate: $g = b * ROE$
8.3	Total return = Income yield + Capital gain (loss) yield = $\frac{CF_1}{P_0} + \frac{P_1 - P_0}{P_0}$
8.5	Geometric average (GM) $= \left[(1+r_1)(1+r_2)(1+r_3)\times(1+r_n)\right]^{1/n} - 1 = \left(\prod_{i=1}^{n}(1+r_i)\right)^{\frac{1}{n}} - 1$
8.6	Expected return: $ER = \sum_{i=1}^{n}\left(r_i * \text{Prob}_i\right)$
8.7	Ex-post $\sigma = \sqrt{\frac{\sum_{i=1}^{n}\left(r_i - \bar{r}\right)^2}{n-1}}$
8.8	Ex-ante $\sigma = \sqrt{\sum_{i=1}^{n}\left(\text{Prob}_i\right)\left(r_i - ER\right)^2}$
8.9	Expected portfolio return: $ER_p = \sum_{i=1}^{n}\left(w_i * ER_i\right)$
8.11	Portfolio standard deviation: $\sigma_P = \sqrt{\left(w_A\right)^2\left(\sigma_A\right)^2 + \left(w_B\right)^2\left(\sigma_B\right)^2 + 2\left(w_A\right)\left(w_B\right)\left(COV_{A,B}\right)}$
8.12	$COV_{A,B} = \sum_{i=1}^{n}\text{Prob}_i(r_{A,i} - \bar{r_a})(r_{B,i} - \bar{r_b})$

8.14	$COV_{AB} = \rho_{AB}\sigma_A\sigma_B$
8.16	If $\rho_{AB} = -1$, then: $\sigma_P = w\sigma_A - (1-w)\sigma_B$
9.3	$E(R_P) = RF + \left(\frac{E(R_A) - RF}{\sigma_A}\right)\sigma_P$
9.4	Slope of CML $= \frac{ER_M - RF}{\sigma_M}$
9.6	Sharpe Ratio $= \frac{ER_P - RF}{\sigma_P}$
9.7	$\beta_i = \frac{Cov_{i,M}}{\sigma_M^2} = \frac{\rho_{i,M}\sigma_i}{\sigma_M}$
9.8	$\beta_P = w_A\beta_A + w_B\beta_B + \ldots + w_n\beta_n$
9.9	$k_i = RF + (ER_M - RF)\beta_i$
12.2	*Option* Premium $= IV + TV$
12.5	Put Call Parity: $P + S = C + PV(X)$
13.1	$NPV = \frac{CF_1}{(1+k)^1} + \frac{CF_2}{(1+k)^2} + \frac{CF_3}{(1+k)^3} + .. + \frac{CF_n}{(1+k)^n} - CF_0 = \sum_{t=1}^{n}\frac{CF_t}{(1+k)^t} - CF_0$
13.3	$PI = \frac{PV(Cash \text{ inflows})}{PV(Cash \text{ outflows})}$
14.1	$CF_0 = C_0 + \Delta NWC_0 + OC$
14.2	$CF_t = CFBT_t(1-T) + CCA_t(T)$
14.4	$ECF_n = SV_n + \Delta NWC_n$
14.5	$NPV = PV(CF_t) + PV(ECF_n) - CF_0$
14.6	$PV(Operating\ Cash\ Flows) = \frac{CFBT(1-T)}{k}\left[1 - \frac{1}{(1+k)^n}\right]$
14.7	$PV(CCA\ Tax\ Shield) = \frac{(C_0)(d)(T)}{d+k} * \frac{(1+0.5k)}{(1+k)} - \frac{(SV_n)(d)(T)}{d+k} * \frac{1}{(1+k)^n}$
20.8	Cost of Capital: $K_a = \frac{ROI \times IC}{V} = \frac{K_e S + K_d(1-T)D}{V} = K_e\frac{S}{V} + K_d(1-T)\frac{D}{V}$
20.9	$WACC = K_e\frac{S}{V} + K_p\frac{P}{V} + K_i\frac{D}{V}$, Where: $K_i = K_d(1-T)$
20.10	Market value: $S = P_0 \times n$
20.13	Net proceeds: $NP = \frac{I(1-T)}{K_i}\left[1 - \frac{1}{(1+K_i)^n}\right] + F\left(\frac{1}{(1+K_i)^n}\right)$
20.14	Cost of preferred shares: $K_p = D_p \Big/ NP$
20.17	$K_{ne} = \frac{D_1}{NP} + g$
20.21	$K_e = \frac{D_1}{P_0} + g = \frac{X_1(1-b)}{P_0} + b * ROE$
20.27	Cost of new equity: $K_{ne} = K_e * \frac{P_0}{NP}$

Print Last Name: ➔	Print First Name: ➔	ID Number: ➔	
COURSE FINANCE	**NUMBER** COMM 308	**SECTIONS: (➔ Circle your section)** CC, DD, F, G, H, I	
EXAMINATION Final Exam **VERSION BLUE**	**DATE** April 14, 2011	**TIME** 3 hours 19:00 – 22:00	**# OF PAGES 18** including cover
INSTRUCTOR: **(➔ Underline your instructor's name)** Nabil El Meslmani Ravi Mateti Reena Atanasiadis David Newton Stephen Wong		**DIVISION** John Molson School of Business Concordia University	

READ THESE SPECIAL INSTRUCTIONS CAREFULLY

- **You must submit a BLUE computer answer sheet.**

- **For Multiple Choice Questions,**
  All answers must be recorded IN PENCIL on the computer sheet.
- **For Problems:**
  All answers must be recorded IN INK within this exam.
  Show your calculations to earn part marks. Write in the space provided.
- **If you are using the back of the exam for answering any question, you should label it clearly**

- **Please ensure you have 18 pages (including the cover page) in this exam.**

- **Fill in your name and other required information IN PENCIL on the Computer Answer sheet as well as IN INK on this cover sheet.**

- **Blank questions or those with multiple answers will not receive credit.**

SCORES (FOR INTERNAL USE ONLY)

Part I Multiple Choice Questions	**Part II Long Answer Questions**				
	Question 1	Question 2	Question 3	Question 4	
(Max: 70 Points)	(Max: 7 Points)	(Max: 11 Points)	(Max: 6 Points)	(Max: 6 Points)	**Total**

Part I: Multiple Choice Questions (28 Questions, 70 Points Total):

- This part consists of 28 Multiple Choice Questions.
- Each question counts 2.5 points for a total of 70 points.
  - **Only answers on the computer answer sheet will be graded.**
  - **Use a pencil to mark your answers on the Computer Sheet.**

1. Which of the following help ensure managers act in the best interest of owners?
   I. Compensation package for managers that ties their salary to the firm's share price.
   II. Managers are promoted only if the firm prospers.
   III. The threat that if the firm does poorly, shareholders will use a proxy fight to replace the existing management.
   IV. There is a high degree of likelihood the firm will become a takeover candidate if the firm performs poorly.

   A) I and II only
   B) II and III only
   C) I, III, and IV only
   D) I, II, and III only
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   A) $30,000
   B) $15,000
   C) $42,000
   D) $25,500
   E) $45,000

$$year1: \frac{1}{2} \times 0.3 \times 100{,}000 = \$15{,}000$$
$$year2: 0.3 \times (100{,}000 - 15{,}000) = \$25{,}500$$

3. James plans on saving money to buy his dream car. He is opening an account today with a deposit of $15,000 and expects to earn 4% interest (effective annual rate). After 3 years, he will add an additional $50,000 to the account. If the account continues to earn 4% EAR, how much money will James have in his account five years from now?

   A) $65,000.00
   B) $67,600.00
   C) $72,000.00
   D) $72,329.79
   E) $79,082.44

Future Value of $15,000 after t=5, k=4%
+ Future Value of $50,000 after t=2, k=4%
$15{,}000 \times 1.04^5 + 50{,}000 \times 1.04^2 = \$72{,}329.79$

4. Simpsons, Inc. invested $1.325 million in a project that earned an 8.25% rate of return (effective annual rate). Sampson sold their investment for $3,713,459. How much sooner could Simpsons have sold the company if they only wanted $3 million from the project?

A) 2.69 years
B) 3.33 years
C) 5.17 years
D) 6.67 years
E) 10.31 years

Calculate time needed to increase 3 mill to 3.713459 mill with k =8.25%

$3 \times 1.0825^{t} = 3.713459$

$$\therefore t = \frac{\ln(3.713459) - \ln(3)}{\ln(1.0825)} = 2.69 \text{ years}$$

5. The greater the number of years, the:

A) Smaller the future value of a single sum.
B) Larger the present value of a single sum.
C) Greater the compounding effect.
D) None of the above.
E) Insufficient information.

6. XYZ shares are selling for $55.00. The 2 year put option on XYZ shares has the following characteristics: strike = 50, price = $0.25. Given that the risk free rate is 2%, what is the price of a 2 year call option on XYZ shares with an exercise price of 50?

A) 5.25
B) 7.19
C) -4.75
D) $0.25
E) 0

$P + S = C + X * (1 + k)^{-t}$

$0.25 + 55 = C + 50 * 1.02^{-2}$

$C = \$7.19$

7. Jack and Jill both want to have $5,000 in three years. Jack expects to earn 8% on his investments and Jill expects a 7% rate of return. Which one of the following statements is correct concerning the amount of money they each need to invest today?

A) Jill needs to deposit $112.33 more than Jack today.
B) Jill needs to deposit $173.33 more than Jack today.
C) Jack needs to deposit $3,699.16 today.
D) Jill needs to deposit $3,081.49 today.
E) Both Jack and Jill should deposit $3,969.16 today.

Let x be Jack's investment

Let y be Jill's investment

$x - y = 5000 \times \left(1.08^{-3} - 1.07^{-3}\right) = -112.33$

8. You own a furniture store. You normally sell a living room set for $2,500 and finance the full purchase price for 30 monthly payments at 24% APR (compounded monthly). You are planning to run a zero-interest financing sale during which you will finance the set over 30 months at 0% interest. What should be your selling price during the zero-interest financing sale such that you are able to earn your usual combined return on the sale and the financing? Assume all payments are made at the end of the month.

A) $ 2,500.00
B) $ 3,100.00
C) $ 3348.74
D) $4528.41
E) $128.43

Price should e such that the monthly payment should not change

$$PMT = 2500 \times 0.02 \times \left[1 - \frac{1}{1.02^{30}}\right]^{-1} = \$111.6248$$

$$\therefore New \text{ price(with } 0\%) = 30 \times 111.6248 = \$3348.74$$

9. Strapped for cash, your acquaintance Mr. John Doe makes you the following offer. He would like to borrow $10,000 today. He will repay the $10,000 by making yearly payments with the first payment being for $1,000 at the end of this year. The payments will grow by 10% every year thereafter. If the appropriate discount rate is 12% (effective annual rate), how long will it take for Mr. Doe to repay the loan?

A) 12.38 years
B) 10 years
C) 13.28 years
D) 18.32 years
E) 21.38 years

$$10{,}000 = \frac{1000}{0.12 - 0.1} \times \left(1 - \left(\frac{1.1}{1.12}\right)^{n}\right)$$

$$\therefore n = 12.38 \text{ years}$$

10. Given a fixed stream of monthly income the:

A) Present value will increase as the time period increases.
B) Future value will decrease as the time period increases.
C) Present value will decrease as the annual percentage rate decreases.
D) Future value will increase as the annual percentage rate decreases.
E) Future value will increase if payments are made at the end of the period rather than the beginning.

11. Thomas wants to save $1,200 a year in a manner that maximizes his savings. To do this, he should:

A) Deposit $1,200 into his savings account on the last day of each year.
B) Treat his $100 monthly savings deposits as an annuity due.
C) Treat his $100 monthly savings deposits as an ordinary annuity.
D) Deposit $300 into his account at the end of each quarter.
E) Deposit $600 into his account at the end of every six month period.

12. Which of the following statements are correct concerning interest rate risk?

I. The shorter the term, the greater the interest rate risk.
II. The longer the term, the greater the interest rate risk.
III. The lower the coupon rate, the greater the interest rate risk.
IV. The higher the coupon rate, the higher the interest rate risk.

A) I and III only
B) I and IV only
C) II and III only
D) II and IV only
E) Insufficient Information.

13. Which of the following is (are) true concerning bond prices?

I. A discount bond will be priced closer and closer to face value as the time to maturity decreases, all else equal.
II. A premium bond will be priced closer and closer to face value as the time to maturity decreases, all else equal.
III. A bond's price reflects the bond's rating and time to maturity.
IV. A bond's price will decrease as interest rates increase.

A) I and IV only
B) II and III only
C) II and IV only
D) I, III, and IV only
E) I, II, III, and IV

14. Given no change in required returns, the price of a stock whose dividend is constant will:

A) Increase over time at a rate of r%.
B) Decrease over time at a rate of r%.
C) Increase over time at a rate equal to the dividend growth rate.
D) Decrease over time at a rate equal to the dividend growth rate.
E) Remain unchanged.

15. The Jane Doe Inc. bonds are currently selling for $1,003.17. These bonds mature in three years, pay coupons annually, and have a yield-to-maturity of 6.63%. What is the coupon rate?

A) 6.50%
B) 6.60%
C) 6.63%
D) 6.75%
E) 6.90%

$$1003.17 = \frac{C}{0.0663} \times \left(1 - \frac{1}{1.0663^3}\right) + \frac{1000}{1.0663^3}$$

$$C = \$67.499 \Rightarrow \textit{coupon rate} = 6.75\%$$

16. If two stocks have the same earnings per share and required rate of return, differences in the _____ of the two companies can account for different stock prices.

A) voting rights
B) growth opportunities
C) number of shares outstanding
D) number of directors
E) value of preferred stock

17. It is more difficult to value a stock than it is to value a bond because:
I. The future cash flows of equity are known.
II. Future cash flows of bonds are known
III. The life of an equity security is unlimited.
IV. The required market rate of return on a stock is known in advance.

A) I
B) II
C) I and III
D) II and III
E) II, III and IV

18. A company has a market-to-book ratio that is greater than 1.0. If this company uses book value of equity to determine their WACC, they will derive a value that is _____ the market based WACC. because _____

A) Equivalent to; the ratio of debt to equity is the same whether book values or market values are used.
B) Greater than; the ratio of debt to equity will be greater than if the ratio was based on market values.
C) Greater than; the ratio of debt to equity will be less than if the ratio was based on market values.
D) Less than: the ratio of debt to equity will be greater than if the ratio was based on market values.
E) Less than; the ratio of debt to equity will be less than if the ratio was based on market values.

$\because \frac{M}{B} > 1 \Rightarrow market\_value > Book\_value$

$\therefore Equity\ will\ be\ underestimated \Rightarrow \frac{D}{E} : \ \frac{D}{B} > \frac{D}{M}$

$\therefore$ Higher weight on cost of debt and lower weight on cost of eq

$\because$ cost of debt < cost of equity $\Rightarrow$ WACC will be lower

19. Deep Pockets Mining unexpectedly discovered an extremely rich vein of gold. Which of the following types of stakeholder owns the increased profits that will be generated from this find?

I. Preferred shareholders
II. Bond holders
III. Common shareholders

A) I only
B) II only
C) III only
D) I, and III only
E) I, II, and III

20. Suppose that sales and profits of Ollie Enterprises are growing at a rate of 30% per year. At the end of four years the growth rate will drop to a steady 4%. At the end of year 5, Ollie will issue its first dividend in the amount of $2 per share. If the required return is 16%, what is the value of a share of stock? Assume dividends grow at the same rate as earnings after year 4.

A) $7.49
B) $7.67
C) $8.17
D) $9.20
E) $9.91

$$Price = \frac{2}{0.16 - 0.04} \times \frac{1}{1.16^4} = \$9.20$$

21. The Battery Co. paid $1.20 in dividends last year. Last year Margaret paid a price of $15.00 a share for Battery Co. stock and she has an expected return of 8% on this investment. What is the growth rate of the Battery Co. stock?

A) 0%
B) 4%
C) 8%
D) 12%
E) 16%

$$15 = \frac{1.2 \times (1+g)}{0.08 - g} \Rightarrow g = 0$$

22. The internal rate of return on a project is 11.24%. Which of the following (is) are true if the project is assigned a 9.5% discount rate?

I The project will have a negative net present value.
II The profitability index will be greater than 1.0.
III The initial investment is less than the market value of the project.
IV The project will have a positive effect on shareholders if it is accepted.

A) I only
B) II and IV only
C) I and III only
D) II and III only
E) II, III, and IV only

23. If portfolio weights are positive: 1) Can the return on a portfolio ever be less than the smallest return on an individual security in the portfolio? 2) Can the variance of a portfolio ever be less than the smallest variance of an individual security in the portfolio?

A) 1) yes; 2) yes
B) 1) yes; 2) no
C) 1) no; 2) yes
D) 1) no; 2) no
E) 1) maybe; 2) no

24. Which of the following are examples of systematic risk?

I. An increase in the rate of GDP growth
II. An increase in the productivity of ABC Co. workers
III. A decrease in the rate of inflation
IV. A decrease in a firm's cost of borrowing

A) I and II only
B) I and III only
C) II and IV only
D) II and III only
E) I, III, and IV only

25. An asset that has an expected rate of return above the security market line:

A) Is overpriced.
B) Is underpriced.
C) Is less risky than the market.
D) Has a beta greater than 1.
E) Has a standard deviation equal to 0.

26. A firm is considering a project that is virtually risk-free. The company has a beta of 1.3 and a debt-equity ratio of .4. The appropriate discount rate to use in analyzing this project is:

A) The firm's current WACC.
B) Required rate of return based on a beta of 1.3.
C) The cost of equity capital.
D) The Treasury bill rate.
E) Zero.

27. An increase in which of the following will increase the value of a call option?

I. Underlying stock price
II. Exercise price
III. Time to expiration
IV. Variance of the return on the underlying asset

A) III and IV only
B) I and III only
C) II and IV only
D) I, III, and IV
E) I, II, III, and IV

28. You discover that you can make greater than expected returns by buying stock in firms whenever the growth rate in sales predicted by an investment survey exceeds the stock's current price-earnings ratio. Which of the following describes this event?

A) This would not be a violation of market efficiency.
B) This would be a violation of weak form efficiency.
C) This would be a violation of semi-strong form efficiency but not of weak form efficiency.
D) This would be a violation of strong form efficiency but not of semi-strong form efficiency.
E) This would be a violation of all forms of market efficiency.

Part II: Problems (30 Points Total)

- **Answer on this document, in the space provided.**
- Show all of your calculations.
- Write clearly! Part marks will be awarded (when deserved).

Q1: (7 Points)

Elbonia Mudworks capital structure is as follows:

Debt: 4,000 10-year, 8% semi-annual coupon bonds (4% coupon every 6 months) priced at par (face value = $1,000), Common stock: 50,000 shares outstanding, price = $62 and β = 1.1, Preferred stock: 9,000 shares of 4% preferred stock outstanding, price = $60 (face value = $100). Assume that the market premium is currently at 5% and the short-term government of Canada bills are yielding 6%

Elbonia is considering investing in a new project. The new project is similar in risk to the current operations of the firm. The project is for 4 years and it will require an investment of $100,000 in new equipment. The CCA rate is 25% and the tax rate is 35%. Elbonia's management has estimated the IRR of the new project to be 10%.

Should the firm accept the new project? Support your answer with calculations and/or reasoning.

Solution:

If required rate of return for the project is less than the estimated IRR, then accept the project

$$required\_rate\_of\_return = WACC = k_e \frac{S}{V} + k_p \frac{P}{V} + k_d \times (1-T)\frac{D}{V}$$

Bond prices are at par:
$$\therefore YTM = Coupon\_Rate = 8\%$$
$$\therefore k_d = (1+0.04)^2 - 1 = 0.0816 = 8.16\%$$

Common stock:
$$k_e = k_f + \beta \times (k_m - k_f)$$
$$= 0.06 + 1.1 \times 0.05 = 0.115 = 11.5\%$$

Preferred stock: $k_p = \frac{D}{P} = \frac{4}{60} = 0.06666 = 6.67\%$

Capital Structure:
$$D = 4{,}000 \times 1{,}000 = \$4{,}000{,}000$$
$$S = 50{,}000 \times 62 = \$3{,}100{,}000$$
$$P = 9{,}000 \times 60 = \$540{,}000$$
$$\therefore V = D + S + P = \$7{,}640{,}000$$

$$\therefore WACC = 0.115 \times \frac{3.1}{7.64} + 0.06667 \times \frac{0.54}{7.64} + 0.0816 \times (1-0.35) \times \frac{4}{7.64}$$
$$= 0.07914398 \cong 7.91\%$$

Estimated IRR is 10% which is greater than the WACC (which is 7.91%)

Therefore, accept the project.

Q2: (11 Points)

You are a recycler of spent plutonium rods from nuclear reactors, and a new government mandate requires you to purchase a filtration system for your wastewater. You can choose between two machines:

Machine 1 has a four-year life and costs 1,200,000. It has an annual pre-tax operating cost of $100,000 in the first year. Operating costs are expected to increase at a rate of 5% per year over the life of machine.

Machine 2 has a six-year life costs $720,000. It has an annual pre-tax operating cost of $80,000 in the first year. The operating costs for the second machine are expected to increase at the rate of 8% per year over the life of the machine.

You do not foresee any further changes in environmental laws or changes in water filtration technology. Both machines have zero salvage values. Both machines belong to CCA class 22 with a depreciation rate of 50%. The corporate tax rate is 34% and the appropriate discount rate is 12%.

a) (2.5 point) What is the NPV of investing in Machine 1?

$$NPV = -1,200,000 - \frac{100,000\times(1-0.34)}{0.12-0.05}\left(1-\frac{1.05^4}{1.12^4}\right)+$$
$$\frac{1,200,000\times 0.5\times 0.34}{0.12+0.5}\times\frac{1+0.5\times 0.12}{1.12} = -1,103,116.91$$

b) (2.5 point) What is the NPV of investing in Machine 2?

$$NPV = -720,000 - \frac{80,000 \times (1-0.34)}{0.12-0.08}\left(1 - \frac{1.08^6}{1.12^6}\right) + \frac{720,000 \times 0.5 \times 0.34}{0.12+0.5} \times \frac{1+0.5 \times 0.12}{1.12} = -791,929.59$$

c) (2 point) What is machine 1's EANPV?

$$-1{,}103{,}116.91 = \frac{EANPV_1}{0.12}\left(1 - \frac{1}{1.12^4}\right)$$
$$\Rightarrow EANPV_1 = -363{,}184.08$$

d) (2 point) What is machine 2's EANPV?

$$-791{,}929.59 = \frac{EANPV_2}{0.12}\left(1 - \frac{1}{1.12^6}\right)$$
$$\Rightarrow EANPV_2 = -192{,}617.64$$

e) (1 point) Which machine should you buy?

Choose Machine 2 (Less expensive per year)

f) (1 points) Do you need your results from c. and d. in order to answer question e? Why or why not?
No, because Machine 2 has lower cost (in terms of PV) and it has longer useful life.

Q3: (6 Points)

Important: when drawing payoff or profit diagrams, you need to show the location of each important point on the diagram by writing down the relevant numbers next to each point (i.e. indicate intersections with the horizontal and vertical axes and any points where the payoff/profit function changes abruptly).

Consider a portfolio composed of two options written on the same stock:

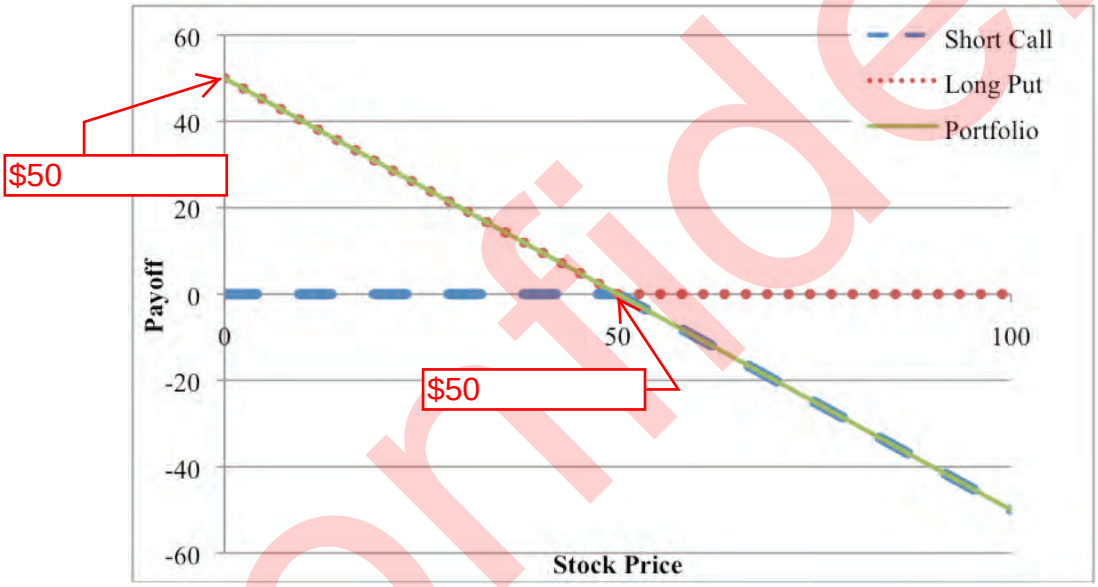
- Short one European call option with a strike price $50
- Long one European put option with a strike price $50

With both options maturing at date T.

a) (5 Points) What is the payoff of this portfolio at date T? Draw the payoff diagram.

Payoff matrix:

	Stock Price		
	0	50	80
Short Call	0	0	-30
Long Put	50	0	0
Portfolio	**50**	**0**	**-30**



b) (1 Point) Name one financial asset that has the same payoff as the above portfolio?

Short Stock

Q4: (6 Points) Short Answers:

a) (2 points) Suppose you own 100 shares of IBM stock, which you intend to sell today. Since you will sell it in the secondary market, IBM will receive no direct cash flows as a consequence of your sale. Why, then, should IBM's management care about the price you get for your shares?

Look for any two reasons

- Management are Often Shareholders Too
- Stock means ownership -- poor performance can lead to proxy fights or other moves to change management.
- Better performing stocks lead to availability of cheaper financing through a lower interest rate (cost of capital)
- Falling prices can make the company vulnerable to takeovers and acquisitions -- change of management
- Company may aim to increase share prices simply to increase their prestige -- ego booste for management.

b) (2 points) Since debt is typically a cheaper source of financing than is equity, why don't firms use as close to 100% debt financing as possible?

Student should mention the disadvantages of debt (any two):

- Bankruptcy Cost: Higher business risk --> Higher Cost
- Agency Cost: Greater the separation between stockholders & lenders --> Higher Cost
- Loss of Future Financing Flexibility: Greater the uncertainty about future financing needs --> Higher Cost

c) (2 points) Your friend argues that trading on insider information should be made legal because trading by insiders will make the market strong form efficient. Argue against this reasoning.

Student should bring out the problems related to insider trading:

If there are legal barriers to private information becoming public, as with insider trading laws, strong-form efficiency is impossible, except in the case where the laws are universally ignored.
However, there are some arguments against insider trading **(look for any two reasons)**:

- Increase asymmetry of information. This can potentially drive out non-insiders or uninformed traders because they will be always disadvantaged. This will reduce the investor base and make the market more illiquid
- Unequal (in-principle) access to information. This goes ethically against the principles of fair market.
- Counter to fiduciary duty: Insiders (read management) has the fiduciary duty to increase the shareholder's wealth. Allowing insider trading might lead to management working in their own interest at the cost of outsider shareholders.

Equation List - Comm 308 - Booth-Cleary Text

5.3	Present Value of FV_n : $PV_0 = \frac{FV_n}{(1+k)^n}$
5.4	Future value of an annuity: $FV_n = \frac{PMT}{k}\left[(1+k)^n - 1\right]$
5.5	Present Value of an annuity: $PV_n = \frac{PMT}{k}\left[1 - \frac{1}{(1+k)^n}\right]$
5.8	Present value of perpetuity: $PV_0 = \frac{PMT}{k}$
5.10	Effective rate with continuous compounding: $k = e^{QR} - 1$
5.11	Effective rate: $k = \left(1 + \frac{QR}{m}\right)^{\frac{m}{f}} - 1$
5A-2	Present value of growing perpetuity: $PV_0 = \frac{PMT_0(1+g)}{k-g} = \frac{PMT_1}{k-g}$
5A-4	Present value of growing annuity: $PV_0 = \frac{PMT_1}{k-g}\left[1 - \left(\frac{1+g}{1+k}\right)^n\right]$
6.3	Current Yield: $CY = \frac{Annual\ Interest}{B}$
6.6	Price of T-Bill given BEY: $P = \frac{F}{\left(1 + k_{BEY} \times \frac{n}{365}\right)}$
7.10	Share price with growth opportunities: $P_0 = \frac{EPS_1}{k_c} + PVGO$
7.11	Growth rate: $g = b * ROE$
8.3	Total return = Income yield + Capital gain (loss) yield = $\frac{CF_1}{P_0} + \frac{P_1 - P_0}{P_0}$
8.5	Geometric average (GM) $= \left[(1+r_1)(1+r_2)(1+r_3)\times\cdots\times(1+r_n)\right]^{1/n} - 1 = \left(\prod_{i=1}^{n}(1+r_i)\right)^{\frac{1}{n}} - 1$
8.6	Expected return: $ER = \sum_{i=1}^{n}(r_i * \text{Prob}_i)$
8.7	Ex-post $\sigma = \sqrt{\frac{\sum_{i=1}^{n}(r_i - \bar{r})^2}{n-1}}$
8.8	Ex-ante $\sigma = \sqrt{\sum_{i=1}^{n}(\text{Prob}_i)(r_i - ER)^2}$
8.9	Expected portfolio return: $ER_p = \sum_{i=1}^{n}(w_i * ER_i)$
8.11	Portfolio standard deviation: $\sigma_P = \sqrt{(w_A)^2(\sigma_A)^2 + (w_B)^2(\sigma_B)^2 + 2(w_A)(w_B)(COV_{A,B})}$
8.12	$COV_{A,B} = \sum_{i=1}^{n}\text{Prob}_i(r_{A,i} - \bar{r_a})(r_{B,i} - \bar{r_b})$

8.14	$COV_{AB} = \rho_{AB}\sigma_A\sigma_B$
8.16	If $\rho_{AB} = -1$, then: $\sigma_P = w\sigma_A - (1-w)\sigma_B$
9.3	$E(R_P) = RF + \left(\frac{E(R_A) - RF}{\sigma_A}\right)\sigma_P$
9.4	Slope of CML $= \frac{ER_M - RF}{\sigma_M}$
9.6	Sharpe Ratio $= \frac{ER_P - RF}{\sigma_P}$
9.7	$\beta_i = \frac{Cov_{i,M}}{\sigma_M^2} = \frac{\rho_{i,M}\sigma_i}{\sigma_M}$
9.8	$\beta_P = w_A\beta_A + w_B\beta_B + \ldots + w_n\beta_n$
9.9	$k_i = RF + (ER_M - RF)\beta_i$
12.2	$Option$ Premium $= IV + TV$
12.5	Put Call Parity: $P + S = C + PV(X)$
13.1	$NPV = \frac{CF_1}{(1+k)^1} + \frac{CF_2}{(1+k)^2} + \frac{CF_3}{(1+k)^3} + .. + \frac{CF_n}{(1+k)^n} - CF_0 = \sum_{t=1}^{n}\frac{CF_t}{(1+k)^t} - CF_0$
13.3	$PI = \frac{PV(Cash\ \text{inflows})}{PV(Cash\ \text{outflows})}$
14.1	$CF_0 = C_0 + \Delta NWC_0 + OC$
14.2	$CF_t = CFBT_t(1-T) + CCA_t(T)$
14.4	$ECF_n = SV_n + \Delta NWC_n$
14.5	$NPV = PV(CF_t) + PV(ECF_n) - CF_0$
14.6	$PV(Operating\ Cash\ Flows) = \frac{CFBT(1-T)}{k}\left[1 - \frac{1}{(1+k)^n}\right]$
14.7	$PV(CCA\ Tax\ Shield) = \frac{(C_0)(d)(T)}{d+k} * \frac{(1+0.5k)}{(1+k)} - \frac{(SV_n)(d)(T)}{d+k} * \frac{1}{(1+k)^n}$
20.8	Cost of Capital: $K_a = \frac{ROI \times IC}{V} = \frac{K_e S + K_d(1-T)D}{V} = K_e\frac{S}{V} + K_d(1-T)\frac{D}{V}$
20.9	$WACC = K_e\frac{S}{V} + K_p\frac{P}{V} + K_i\frac{D}{V}$, Where: $K_i = K_d(1-T)$
20.10	Market value: $S = P_0 \times n$
20.13	Net proceeds: $NP = \frac{I(1-T)}{K_i}\left[1 - \frac{1}{(1+K_i)^n}\right] + F\left(\frac{1}{(1+K_i)^n}\right)$
20.14	Cost of preferred shares: $K_p = D_p \Big/ NP$
20.17	$K_{ne} = \frac{D_1}{NP} + g$
20.21	$K_e = \frac{D_1}{P_0} + g = \frac{X_1(1-b)}{P_0} + b * ROE$
20.27	Cost of new equity: $K_{ne} = K_e * \frac{P_0}{NP}$

Print Last Name: ➔	Print First Name: ➔	ID Number: ➔	
COURSE FINANCE	**NUMBER** COMM 308	**SECTIONS: (➔ Circle your section)** AA, AB	
EXAMINATION Final Exam **VERSION BLUE**	**DATE** June 23, 2011	**TIME** 3 hours 19:00 to 22:00	**# OF PAGES 18** including cover
INSTRUCTOR: **(➔ Underline your instructor's name)** David Newton Jay Mannadiar		**DIVISION** John Molson School of Business Concordia University	

READ THESE SPECIAL INSTRUCTIONS CAREFULLY

- You must submit a BLUE computer answer sheet.

- For Multiple Choice Questions,
All answers must be recorded IN PENCIL on the computer sheet.
- For Problems:
All answers must be recorded IN INK within this exam.
Show your calculations to earn part marks. Write in the space provided.
- If you are using the back of the exam for answering any question, you should label it clearly

- Please ensure you have 18 pages (including the cover page) in this exam.

- Fill in your name and other required information IN PENCIL on the Computer Answer sheet as well as IN INK on this cover sheet.

- Blank questions or those with multiple answers will not receive credit.

SCORES (FOR INTERNAL USE ONLY)

Part I Multiple Choice Questions	Part II Long Answer Questions				
	Question 1	Question 2	Question 3	Question 4	
(Max: 70 Points)	(Max: 10 Points)	(Max: 9 Points)	(Max: 5 Points)	(Max: 6 Points)	**Total**

Part I: Multiple Choice Questions (28 Questions, 70 Points Total):

- This part consists of 28 Multiple Choice Questions.
- Each question counts 2.5 points for a total of 70 points.
  - **Only answers on the computer answer sheet will be graded.**
  - **Use a pencil to mark your answers on the Computer Sheet.**

1. A _____ can lose, at most, what she has already invested in a firm.

   I. common stockholder
   II. limited partner
   III. general partner
   IV. sole proprietor

   A) I only
   B) I and II only
   C) I, II, and IV only
   D) II, III, and IV only
   E) II and III only

2. On January 1, 2011, the Simpsons Inc. had the following UCC balances:
   - Class 43, CCA rate = 30%, UCC = $25,000
   - Class 8, CCA rate = 20%, UCC = $10,000

   During 2011, Simpsons neither bought nor sold any assets. The total CCA that Simpsons can claim in 2011 is:

   A) $4,750
   B) $7,000
   C) $9,500
   D) $10,500
   E) $45,000

3. John Doe Enterprises borrowed $149,500 for two years from the bank. At the end of the two years, they repaid the loan with one payment of $176,590. What was the quoted interest rate on the loan? Assume the interest rate is quoted as APR compounded semi-annually.

   A) 4.25%
   B) 8.36%
   C) 8.50%
   D) 8.68%
   E) 18.12%

4. Jane Doe Inc. invested $735,000 at an 11.25% rate of return (effective annual). The company sold their investment for $1,067,425. How much longer would Lakeside have had to wait if they had wanted to sell their investment for $1.25 million?

   A) .98 year
   B) 1.48 years
   C) 1.98 years
   D) 2.31 years
   E) 3.50 years

5. John invests $25,000 per year, for 40 years at an interest rate of 7%. He will make his first payment of $25,000 in one year and he expects his subsequent annual contributions to increase by 7% per year. What is the value of the investment at the end of the 40 years?

   A) $934,579.44
   B) $1,000,000.00
   C) $4,990,877.80
   D) $13,994,820.41
   E) $33,550,627.47

6. Ignoring taxes, if a firm issues debt at par, then:
   I. The cost of debt is equal to its coupon rate.
   II. The cost of debt is equal to its yield to maturity
   III. The cost of debt is equal to its current yield.

   A) I only
   B) II only
   C) III only
   D) I and II only
   E) I, II, and III

7. Tom and Antonio both want to open savings accounts today. Tom wants to have $1,000 in his savings account six years from now. Antonio wants to have $1,000 in his savings account three years from now. Which of the following statements is(are) correct assuming that both Antonio and Tom earn the same rate of interest? (*Note: Assume that the interest rate is greater than zero*)
   I. Tom needs to deposit more money into his account today than does Antonio.
   II. Tom will need to deposit twice the amount of money today as Antonio.
   III. Antonio needs to deposit more money into his account today than does Tom.
   IV. Antonio needs to deposit twice the amount of money today as Tom.

   A) I only
   B) III only
   C) I and II only
   D) III and IV only
   E) None of the above

8. The Hold'm Company offers a perpetuity of $50,000 per year with the first payment on January 1, 2012. If the interest rate in the market remains constant over time, the price you are willing to pay for this perpetuity _____ over time.

   A) increases
   B) decreases
   C) stays the same
   D) either increases or decreases, depending on the interest rate
   E) either increases or decreases, or remains the same, depending on the interest rate

9. The RobM Bank currently offers a savings account with an interest rate of 8% compounded semi-annually. RobM wants to offer customers another account with interest compounded monthly. If RobM wants the effective rates to be equal, what annual interest rate should RobM quote for the second account?

   A) 7.87%
   B) 8.00%
   C) 8.16%
   D) 24.00%
   E) None of the above

10. Which of the following is not accurate regarding financial leverage

    A) Whenever a firm's debt increases faster than its equity, financial leverage increases
    B) Leverage is most beneficial when EBIT is relatively high
    C) Increasing financial leverage will always increase the EPS for stockholders
    D) The level of financial leverage that produces the highest firm value is the one most beneficial to stockholders.
    E) Firms in lower tax brackets will tend to benefit less from increases in financial leverage.

11. A company is considering two separate, mutually exclusive projects A and B. Project A requires an initial investment of $100,000 and is expected to generate after-tax cash flows of $15,000 per year forever. Project B requires an initial investment of $150,000 and is expected to generate after-tax cash flows of $18,000 per year forever. The appropriate discount rate is 10 percent. What is the crossover rate for projects A and B?

    A) 5.00%
    B) 6.00%
    C) 9.00%
    D) 10.00%
    E) None of the above.

12. Jamie owes $21,750 at a 5% APR compounded monthly. The minimum amount that she must pay monthly is $230.69. How much sooner can she pay off this loan if she makes monthly payments of $300.00?

    A) 1.68 years sooner
    B) 2.54 years sooner
    C) 2.79 years sooner
    D) 2.93 years sooner
    E) None of the above

13. Liddy Products, Inc. just issued 10-year, 8% coupon bonds at par. Outstanding Limbaugh Corp. bonds, which have a maturity of 10 years, sell at a premium and are viewed by investors as having the same risk as the Liddy bonds. Therefore, it must be true that:

    A) The coupon rate on the Limbaugh bonds is equal to that on the Liddy bonds.
    B) The coupon rate on the Limbaugh bonds is higher than that on the Liddy bonds.
    C) The coupon payment on the Limbaugh bonds is lower than that on the Liddy bonds.
    D) The yield on Limbaugh bonds is higher than the yield on Liddy bonds.
    E) The Limbaugh bonds pay coupons more often than twice a year.

14. It is now October 25, 2011, Jenny has just purchased a ten-year 4.5 percent Canadian government bond quoted at 96.894. The last semi-annual coupon payment was made on June 30, 2011. How much will Jenny actually pay for this bond? Assume the face value of the bond is $1000.

    A) $954.52
    B) $968.94
    C) $976.15
    D) $983.36
    E) None of the above

15. Big Hat inc just paid a dividend of $1.30. Big Hat stocks are currently selling for $98.13. You believe that the required return on Big Hat stock is 12% and that the expected dividend growth rate is 10%, which is expected to remain constant for the foreseeable future. Is the stock currently overvalued, undervalued, or fairly priced?

    A) Overvalued
    B) Undervalued
    C) Fairly priced
    D) Cannot tell without knowledge of stock beta.
    E) Cannot tell without knowledge of market beta.

16. The return on stock A has a covariance of 0.1 with the return on the market portfolio whereas the return on stock B has covariance of 0.3 with the market return. The return on which stock moves more closely with the return on the market portfolio?

A) Stock A
B) Stock B
C) Insufficient information: we would also need the variance of the market.
D) Insufficient information: we would also need the standard deviation of both A and B.
E) Insufficient information: we would need the covariance between A and B

17. Which bond's price would be the least sensitive to an unexpected change in the interest rate?

A) A discount (or zero coupon) bond with 12 years to maturity
B) A discount (or zero coupon) bond with 8 years to maturity
C) A bond with 10% coupon rate and 8 years to maturity
D) A bond with 5% coupon rate and 8 years to maturity
E) A bond with 5% coupon rate and 10 years to maturity

18. The Money Shoppe will loan you cold hard cash until your next paycheck. You will write a $832 cheque post-dated by two weeks and you will receive $800 right now. What is the biweekly compounded APR of this loan (assuming a year is exactly 52 weeks long)? Note: Biweekly = happening every two weeks.

A) 104.00%
B) 177.25%
C) 204.00%
D) 208.00%
E) 277.25%

19. If you believe that the price of Compact Computer shares will rise, you could profit from the following strategy: ……

I. Write call options on Compact stock.
II. Buy put options on Compact stock
III. Buy call options on Compact stock
IV. Write put options on Compact stock.

A) I only
B) II only
C) III only
D) IV only
E) III, and IV

20. IKEA Direct Return policy: Simple and easy! You may return items to any IKEA store within Canada, in person, for a refund within 45 days of reception. Please be sure to have the original sales receipt and packaging at the time of your visit. The IKEA Direct return policy represents...

A) a European put option written by IKEA Direct.
B) an American put option written by IKEA Direct.
C) an American call option written by IKEA Direct.
D) an American call option written by IKEA Direct customers.
E) an American put option written by IKEA Direct customers.

21. Your quantitative research team at Technical Investment Strategies LLC reports that they identified a successful trading strategy. The team claims that superior returns could be achieved by purchasing Canadian stocks whose price has increased at a higher rate than the increase in the Toronto Stock Exchange S&P/TSX stock market index over the past six month. If true, the existence of such a trading strategy would be evidence...

A) against the stock market being strong form efficient.
B) against the stock market being semi-strong form efficient.
C) against the stock market being weak form efficient.
D) Both (A) and (B)
E) All (A), (B) and (C)

22. You would like to invest in a portfolio with a beta of 0.2. How would you divide your funds between the risk free asset and the market portfolio in order to achieve that goal? …….

A) 2% in the risk free asset, the rest in the market portfolio
B) 20% in the risk free asset, the rest in the market portfolio
C) 50% in the risk free asset, the rest in the market portfolio
D) 80% in the risk free asset, the rest in the market portfolio
E) 100% in the risk free asset

23. The internal rate of return on a project is 11.24%. Which of the following (is) are true if the project is assigned a 9.5% discount rate? (*Note: assume that the cash flows from the project are conventional, i.e. initial outflow followed by positive future cash flows*).

I The project will have a negative net present value.
II The profitability index will be greater than 1.0.
III The initial investment is less than the market value of the project.
IV The project will have a positive effect on shareholders if it is accepted.

A) I only
B) II and IV only
C) I and III only
D) II and III only
E) II, III, and IV only

24. Which of the following is a FALSE statement of the Sharpe ratio?

A) It is used to assess the performance of portfolios.
B) It describes how well an asset's return compensates investors for the risk taken.
C) It is the slope of the CAL.
D) It is a "risk-adjusted" measure of portfolio performance.
E) It is a measure of the asset's "risk-adjusted" return per unit of non-diversifiable risk.

25. A firm's pre-tax cost of debt is RD = 8%, its cost of equity is RE = 12%, and it is subject to a 40% corporate income tax rate. The firm's debt-to-equity ratio is D/E = 2/3. What is the firm's WACC? …… .

A) 7.20%
B) 7.68%
C) 9.12%
D) 10.00%
E) 10.40%

26. Which of the following is NOT true about the P/E ratio?

A) A comparison of one company with its peers also involves a great deal of subjectivity regarding company-specific characteristics.
B) P/E ratios only work well on companies in the high growth stage of their lifecycle.
C) P/E ratios are uninformative when companies have negative or very small earnings.
D) The volatile nature of earnings implies a great deal of volatility in P/E multiples.

27. The steeper the slope of the security market line, the

A) Higher the risk-free rate of return.
B) Lower the risk-free rate of return.
C) Higher the market beta.
D) Higher the risk premium.
E) Lower the risk premium.

28. For a given effective annual rate, the quoted rate _____ as the compounding frequency increases.

A) Does not change.
B) Increases.
C) decreases.
D) either increase or decrease, depending on the effective rate.
E) None of the above.

Part II: Problems (30 Points Total)

- **Answer on this document, in the space provided.**
- Show all of your calculations.
- Write clearly! Part marks will be awarded (when deserved).

Q1: (10 Points)

Currently Toronto Dominion Bank is offering a mortgage with an interest rate of 8.6% (APR compounded semi-annually). This mortgage has a 25-year amortization life.

a. (2 Points) What is the effective monthly rate on this mortgage?

b. (3 Points) What are the monthly payments on a $200,000 mortgage under this contract?

c. (2 Points) How much do you still owe three years after you took out this mortgage (i.e. immediately after you made your 36th monthly payment)?

d. (3 Points) What is the principal portion of the 37th mortgage payment?

Q2: (9 Points)

You are taking on a new 4-year project, which does not require any new investments in capital asset. The sales revenues from this project are expected to grow at 5% per year, starting with $20,000 in year one. Expected project costs are $5000 per year. Inventory will increase immediately by $10,000. Accounts receivable are expected to be 10% of revenues and accounts payable are expected to be 5% of costs, each year. Assume that all the net working capital will be recaptured in year 4. Your firm's tax rate is 40% and the WACC is 10%.

a) (5 point) Estimate cash flows (excluding depreciation tax shields) for each year (years 1, 2, 3 and 4)

b) (2 point) What is the NPV of the project, excluding CCA tax shields?

c) (1 point) What is the present value of the CCA tax shields? Explain your answer in words.

d) (1 points) Should you accept or reject the project?

Q3: (5 Points)

Important: when drawing payoff or profit diagrams, you need to show the location of each important point on the diagram by writing down the relevant numbers next to each point (i.e. indicate intersections with the horizontal and vertical axes and any points where the payoff/profit function changes abruptly).

Third Mug Inc. stock currently sells for $30 per share

a) (4 Points) Consider a put option on Third Mug Inc. stock with a strike price of $32 and time to expiration of one year. Draw the profit diagram for a protective put position (i.e. assume you own a share of Third Mug stock and you hold a put option as well).

b) (1 Point) Consider a call option on Third Mug Inc. stock with a strike price of $35 and time to expiration of one year. This option sells for $2. Consider another call option on Third Mug Inc. stock with a strike price of $32 and time to expiration of one year. Do you expect the second option (strike $32) to be more or less expensive than the first option (strike $35) above? Why?

Q4: (6 Points) Short Answers:

a) (2 points) What would be the implications of "unlimited liability" for stockholders?

b) (2 points) Suppose your firm is going to finance a new project 100% with retained earnings. Your boss claims that since the earnings are already being retained and that since no outside financing is required, the project should be evaluated at the risk-free rate of return. Is this appropriate? Are retained earnings risk-free? Why or why not?

c) (2 points) Suppose your cousin invests in the stock market and doubles her money in a single year while the market, on average, earned a return of only about 15%. Is your cousin's performance a violation of market efficiency?

Equation List - Comm 308 - Booth-Cleary Text

5.3	Present Value of FV_n : $PV_0 = \frac{FV_n}{(1+k)^n}$
5.4	Future value of an annuity: $FV_n = \frac{PMT}{k}\left[(1+k)^n - 1\right]$
5.5	Present Value of an annuity: $PV_n = \frac{PMT}{k}\left[1 - \frac{1}{(1+k)^n}\right]$
5.8	Present value of perpetuity: $PV_0 = \frac{PMT}{k}$
5.10	Effective rate with continuous compounding: $k = e^{QR} - 1$
5.11	Effective rate: $k = \left(1 + \frac{QR}{m}\right)^{\frac{m}{f}} - 1$
5A-2	Present value of growing perpetuity: $PV_0 = \frac{PMT_0(1+g)}{k-g} = \frac{PMT_1}{k-g}$
5A-4	Present value of growing annuity: $PV_0 = \frac{PMT_1}{k-g}\left[1 - \left(\frac{1+g}{1+k}\right)^n\right]$
6.3	Current Yield: $CY = \frac{Annual\ Interest}{B}$
6.6	Price of T-Bill given BEY: $P = \frac{F}{\left(1 + k_{BEY} \times \frac{n}{365}\right)}$
7.10	Share price with growth opportunities: $P_0 = \frac{EPS_1}{k_c} + PVGO$
7.11	Growth rate: $g = b * ROE$
8.3	Total return = Income yield + Capital gain (loss) yield = $\frac{CF_1}{P_0} + \frac{P_1 - P_0}{P_0}$
8.5	Geometric average (GM) $= \left[(1+r_1)(1+r_2)(1+r_3)\times\ (1+r_n)\right]^{1/n} - 1 = \left(\prod_{i=1}^{n}(1+r_i)\right)^{\frac{1}{n}} - 1$
8.6	Expected return: $ER = \sum_{i=1}^{n}(r_i * \text{Prob}_i)$
8.7	Ex-post $\sigma = \sqrt{\frac{\sum_{i=1}^{n}(r_i - \bar{r})^2}{n-1}}$
8.8	Ex-ante $\sigma = \sqrt{\sum_{i=1}^{n}(\text{Prob}_i)(r_i - ER)^2}$
8.9	Expected portfolio return: $ER_p = \sum_{i=1}^{n}(w_i * ER_i)$
8.11	Portfolio standard deviation: $\sigma_P = \sqrt{(w_A)^2(\sigma_A)^2 + (w_B)^2(\sigma_B)^2 + 2(w_A)(w_B)(COV_{A,B})}$
8.12	$COV_{A,B} = \sum_{i=1}^{n}\text{Prob}_i(r_{A,i} - \bar{r_a})(r_{B,i} - \bar{r_b})$

8.14	$COV_{AB} = \rho_{AB}\sigma_A\sigma_B$
8.16	If $\rho_{AB} = -1$, then: $\sigma_P = w\sigma_A - (1-w)\sigma_B$
9.3	$E(R_P) = RF + \left(\frac{E(R_A) - RF}{\sigma_A}\right)\sigma_P$
9.4	Slope of CML $= \frac{ER_M - RF}{\sigma_M}$
9.6	Sharpe Ratio $= \frac{ER_P - RF}{\sigma_P}$
9.7	$\beta_i = \frac{Cov_{i,M}}{\sigma_M^2} = \frac{\rho_{i,M}\sigma_i}{\sigma_M}$
9.8	$\beta_P = w_A\beta_A + w_B\beta_B + \ldots + w_n\beta_n$
9.9	$k_i = RF + (ER_M - RF)\beta_i$
12.2	$Option$ Premium $= IV + TV$
12.5	Put Call Parity: $P + S = C + PV(X)$
13.1	$NPV = \frac{CF_1}{(1+k)^1} + \frac{CF_2}{(1+k)^2} + \frac{CF_3}{(1+k)^3} + .. + \frac{CF_n}{(1+k)^n} - CF_0 = \sum_{t=1}^{n}\frac{CF_t}{(1+k)^t} - CF_0$
13.3	$PI = \frac{PV(Cash \text{ inflows})}{PV(Cash \text{ outflows})}$
14.1	$CF_0 = C_0 + \Delta NWC_0 + OC$
14.2	$CF_t = CFBT_t(1-T) + CCA_t(T)$
14.4	$ECF_n = SV_n + \Delta NWC_n$
14.5	$NPV = PV(CF_t) + PV(ECF_n) - CF_0$
14.6	$PV(Operating\ Cash\ Flows) = \frac{CFBT(1-T)}{k}\left[1 - \frac{1}{(1+k)^n}\right]$
14.7	$PV(CCA\ Tax\ Shield) = \frac{(C_0)(d)(T)}{d+k} * \frac{(1+0.5k)}{(1+k)} - \frac{(SV_n)(d)(T)}{d+k} * \frac{1}{(1+k)^n}$
20.8	Cost of Capital: $K_a = \frac{ROI \times IC}{V} = \frac{K_e S + K_d(1-T)D}{V} = K_e\frac{S}{V} + K_d(1-T)\frac{D}{V}$
20.9	$WACC = K_e\frac{S}{V} + K_p\frac{P}{V} + K_i\frac{D}{V}$, Where: $K_i = K_d(1-T)$
20.10	Market value: $S = P_0 \times n$
20.13	Net proceeds: $NP = \frac{I(1-T)}{K_i}\left[1 - \frac{1}{(1+K_i)^n}\right] + F\left(\frac{1}{(1+K_i)^n}\right)$
20.14	Cost of preferred shares: $K_p = D_p \Big/ NP$
20.17	$K_{ne} = \frac{D_1}{NP} + g$
20.21	$K_e = \frac{D_1}{P_0} + g = \frac{X_1(1-b)}{P_0} + b * ROE$
20.27	Cost of new equity: $K_{ne} = K_e * \frac{P_0}{NP}$

Print Last Name: ➔	Print First Name: ➔	ID Number: ➔	
COURSE FINANCE	**NUMBER** COMM 308	**SECTIONS: (➔ Circle your section)** CC, DD, F, G, H, I	
EXAMINATION Final Exam **VERSION BLUE**	**DATE** June 23, 2011	**TIME** 3 hours 19:00 to 22:00	**# OF PAGES 18** including cover
INSTRUCTOR: **(➔ Underline your instructor's name)** David Newton Jay Mannadiar		**DIVISION** John Molson School of Business Concordia University	

READ THESE SPECIAL INSTRUCTIONS CAREFULLY

- **You must submit a BLUE computer answer sheet.**

- **For Multiple Choice Questions,**
  All answers must be recorded IN PENCIL on the computer sheet.
- **For Problems:**
  All answers must be recorded IN INK within this exam.
  Show your calculations to earn part marks. Write in the space provided.
- **If you are using the back of the exam for answering any question, you should label it clearly**

- **Please ensure you have 18 pages (including the cover page) in this exam.**

- **Fill in your name and other required information IN PENCIL on the Computer Answer sheet as well as IN INK on this cover sheet.**

- **Blank questions or those with multiple answers will not receive credit.**

SCORES (FOR INTERNAL USE ONLY)

Part I Multiple Choice Questions	**Part II Long Answer Questions**				
	Question 1	Question 2	Question 3	Question 4	
(Max: 70 Points)	(Max: 10 Points)	(Max: 9 Points)	(Max: 5 Points)	(Max: 6 Points)	**Total**

Part I: Multiple Choice Questions (28 Questions, 70 Points Total):

- This part consists of 28 Multiple Choice Questions.
- Each question counts 2.5 points for a total of 70 points.
  - **Only answers on the computer answer sheet will be graded.**
  - **Use a pencil to mark your answers on the Computer Sheet.**

1. A _____ can lose, at most, what she has already invested in a firm.

   I. common stockholder
   II. limited partner
   III. general partner
   IV. sole proprietor

   A) I only
   B) I and II only
   C) I, II, and IV only
   D) II, III, and IV only
   E) II and III only

2. On January 1, 2011, the Simpsons Inc. had the following UCC balances:
   - Class 43, CCA rate = 30%, UCC = $25,000
   - Class 8, CCA rate = 20%, UCC = $10,000

   During 2011, Simpsons neither bought nor sold any assets. The total CCA that Simpsons can claim in 2011 is:

   A) $4,750
   B) $7,000
   C) $9,500
   D) $10,500
   E) $45,000

   $$0.3 \times 25{,}000 + 0.2 \times 10{,}000 = \$9{,}500$$

3. John Doe Enterprises borrowed $149,500 for two years from the bank. At the end of the two years, they repaid the loan with one payment of $176,590. What was the quoted interest rate on the loan? Assume the interest rate is quoted as APR compounded semi-annually.

   A) 4.25%
   B) 8.36%
   C) 8.50%
   D) 8.68%
   E) 18.12%

   $$2\,year \text{ interest } = \frac{176{,}590 - 149{,}500}{149{,}500} = 18.1204\%$$

   $$effective\ 6\ month\ rate = (1 + 0.181204)^{\frac{1}{4}} - 1 = 4.25124\%$$

   $$\therefore Quoted\ rate = 2 \times 4.25124 = 8.50\,APR\ comp.\ semi - annually$$

4. Jane Doe Inc. invested $735,000 at an 11.25% rate of return (effective annual). The company sold their investment for $1,067,425. How much longer would Lakeside have had to wait if they had wanted to sell their investment for $1.25 million?

A) .98 year
B) 1.48 years
C) 1.98 years
D) 2.31 years
E) 3.50 years

$$(1+0.1125)^n \times 1{,}067{,}425 = 1{,}250{,}000$$

$$n = \ln\left(\frac{1.25}{1.067425}\right) \Big/ \ln(1.1125) = 1.48 \, years$$

5. John invests $25,000 per year, for 40 years at an interest rate of 7%. He will make his first payment of $25,000 in one year and he expects his subsequent annual contributions to increase by 7% per year. What is the value of the investment at the end of the 40 years?

A) $934,579.44
B) $1,000,000.00
C) $4,990,877.80
D) $13,994,820.41
E) $33,550,627.47

$$PV_1 = 25{,}000 \times 40$$

$$\therefore FV_{40} = 25{,}000 \times 40 \times 1.07^{39} = \$13{,}994{,}820.41$$

6. Ignoring taxes, if a firm issues debt at par, then:
   I. The cost of debt is equal to its coupon rate.
   II. The cost of debt is equal to its yield to maturity
   III. The cost of debt is equal to its current yield.

A) I only
B) II only
C) III only
D) I and II only
E) I, II, and III

7. Tom and Antonio both want to open savings accounts today. Tom wants to have $1,000 in his savings account six years from now. Antonio wants to have $1,000 in his savings account three years from now. Which of the following statements is(are) correct assuming that both Antonio and Tom earn the same rate of interest? (*Note: Assume that the interest rate is greater than zero*)
   I. Tom needs to deposit more money into his account today than does Antonio.
   II. Tom will need to deposit twice the amount of money today as Antonio.
   III. Antonio needs to deposit more money into his account today than does Tom.
   IV. Antonio needs to deposit twice the amount of money today as Tom.

A) I only
B) III only
C) I and II only
D) III and IV only
E) None of the above

8. The Hold'm Company offers a perpetuity of $50,000 per year with the first payment on January 1, 2012. If the interest rate in the market remains constant over time, the price you are willing to pay for this perpetuity _____ over time.

A) increases
B) decreases
C) stays the same
D) either increases or decreases, depending on the interest rate
E) either increases or decreases, or remains the same, depending on the interest rate

9. The RobM Bank currently offers a savings account with an annual interest rate of 8% compounded semi-annually. RobM wants to offer customers another account with interest compounded monthly. If RobM wants the effective rates to be equal, what annual interest rate should RobM quote for the second account?

A) 7.87%
B) 8.00%
C) 8.16%
D) 24.00%
E) None of the above

$$\left((1+0.04)^{\frac{1}{6}} - 1 \right) \times 12 = 7.87\%$$

10. Which of the following is not accurate regarding financial leverage

A) Whenever a firm's debt increases faster than its equity, financial leverage increases
B) Leverage is most beneficial when EBIT is relatively high
C) Increasing financial leverage will always increase the EPS for stockholders
D) The level of financial leverage that produces the highest firm value is the one most beneficial to stockholders.
E) Firms in lower tax brackets will tend to benefit less from increases in financial leverage.

11. A company is considering two separate, mutually exclusive projects A and B. Project A requires an initial investment of $100,000 and is expected to generate after-tax cash flows of $15,000 per year forever. Project B requires an initial investment of $150,000 and is expected to generate after-tax cash flows of $18,000 per year forever. The appropriate discount rate is 10 percent. What is the crossover rate for projects A and B?

A) 5.00%
B) 6.00%
C) 9.00%
D) 10.00%
E) None of the above.

Crossover rate = rate at which NPV of two projects are equal.

$$\frac{15,000}{k} - 100,000 = \frac{18,000}{k} - 150,000$$

$$k = 6\%$$

12. Jamie owes $21,750 at a 5% APR compounded monthly. The minimum amount that she must pay monthly is $230.69. How much sooner can she pay off this loan if she makes monthly payments of $300.00?

A) 1.68 years sooner
B) 2.54 years sooner
C) 2.79 years sooner
D) 2.93 years sooner
E) None of the above

$$k = 0.05/12 = 0.0041667$$

$$\frac{230.69}{k}\times\left(1-\frac{1}{(1+k)^{n1}}\right)=21{,}750 \text{ and } \frac{300}{k}\times\left(1-\frac{1}{(1+k)^{n2}}\right)=21{,}750$$

$$\therefore n1=\frac{\ln(230.69)-\ln(230.69-21{,}750\times k)}{\ln(1+k)}$$

$$and: n2=\frac{\ln(300)-\ln(300-21{,}750\times k)}{\ln(1+k)}$$

$$\therefore n1-n2=33.50464 \; months = 2.79 \; years$$

13. Liddy Products, Inc. just issued 10-year, 8% coupon bonds at par. Outstanding Limbaugh Corp. bonds, which have a maturity of 10 years, sell at a premium and are viewed by investors as having the same risk as the Liddy bonds. Therefore, it must be true that:

A) The coupon rate on the Limbaugh bonds is equal to that on the Liddy bonds.
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A) $954.52
B) $968.94
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D) $983.36
E) None of the above

$$Number\ of\ days \text{ since } last\ payment = 31+31+30+25=117$$

$$Cash \text{ Price} = \$968.94+\left(1000\times 4.5\%\times\frac{117}{365}\right)=\$983.36$$

15. Big Hat inc just paid a dividend of $1.30. Big Hat stocks are currently selling for $98.13. You believe that the required return on Big Hat stock is 12% and that the expected dividend growth rate is 10%, which is expected to remain constant for the foreseeable future. Is the stock currently overvalued, undervalued, or fairly priced?

A) Overvalued
B) Undervalued
C) Fairly priced
D) Cannot tell without knowledge of stock beta.
E) Cannot tell without knowledge of market beta.

$$\text{Price}=\frac{D_1}{k}=\frac{1.30\times 1.1}{0.12}=\$11.92$$

16. The return on stock A has a covariance of 0.1 with the return on the market portfolio whereas the return on stock B has covariance of 0.3 with the market return. The return on which stock moves more closely with the return on the market portfolio?

$$correlation = \frac{Cov_{A,B}}{\sigma_A \sigma_B}$$

A) Stock A
B) Stock B

C) Insufficient information: we would also need the variance of the market.
D) Insufficient information: we would also need the standard deviation of both A and B.
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C) 204.00%
D) 208.00%
E) 277.25%

$$800 \times (1+k) = 832 \Rightarrow k = 4\%$$

$$biweekly\ compounded\ APR = 26 \times 4\% = 104\%$$

19. If you believe that the price of Compact Computer shares will rise, you could profit from the following strategy: ……

I. Write call options on Compact stock.
II. Buy put options on Compact stock
III. Buy call options on Compact stock
IV. Write put options on Compact stock.

A) I only
B) II only
C) III only
D) IV only
E) III, and IV

20. IKEA Direct Return policy: Simple and easy! You may return items to any IKEA store within Canada, in person, for a refund within 45 days of reception. Please be sure to have the original sales receipt and packaging at the time of your visit. The IKEA Direct return policy represents...

A) a European put option written by IKEA Direct.
B) an American put option written by IKEA Direct.
C) an American call option written by IKEA Direct.
D) an American call option written by IKEA Direct customers.
E) an American put option written by IKEA Direct customers.

21. Your quantitative research team at Technical Investment Strategies LLC reports that they identified a successful trading strategy. The team claims that superior returns could be achieved by purchasing Canadian stocks whose price has increased at a higher rate than the increase in the Toronto Stock Exchange S&P/TSX stock market index over the past six month. If true, the existence of such a trading strategy would be evidence...

A) against the stock market being strong form efficient.
B) against the stock market being semi-strong form efficient.
C) against the stock market being weak form efficient.
D) Both (A) and (B)
E) All (A), (B) and (C)

22. You would like to invest in a portfolio with a beta of 0.2. How would you divide your funds between the risk free asset and the market portfolio in order to achieve that goal? …….

A) 2% in the risk free asset, the rest in the market portfolio
B) 20% in the risk free asset, the rest in the market portfolio
C) 50% in the risk free asset, the rest in the market portfolio
D) 80% in the risk free asset, the rest in the market portfolio
E) 100% in the risk free asset

23. The internal rate of return on a project is 11.24%. Which of the following (is) are true if the project is assigned a 9.5% discount rate? (*Note: assume that the cash flows from the project are conventional, i.e. initial outflow followed by positive future cash flows*).

I The project will have a negative net present value.
II The profitability index will be greater than 1.0.
III The initial investment is less than the market value of the project.
IV The project will have a positive effect on shareholders if it is accepted.

A) I only
B) II and IV only
C) I and III only
D) II and III only
E) II, III, and IV only

24. Which of the following is a FALSE statement of the Sharpe ratio?

A) It is used to assess the performance of portfolios.
B) It describes how well an asset's return compensates investors for the risk taken.
C) It is the slope of the CAL.
D) It is a "risk-adjusted" measure of portfolio performance.
E) It is a measure of the asset's "risk-adjusted" return per unit of non-diversifiable risk.

25. A firm's pre-tax cost of debt is RD = 8%, its cost of equity is RE = 12%, and it is subject to a 40% corporate income tax rate. The firm's debt-to-equity ratio is D/E = 2/3. What is the firm's WACC? …… .

A) 7.20%
B) 7.68%
C) 9.12%
D) 10.00%
E) 10.40%

$$\frac{D}{V}=\frac{2}{5},\ and\ \ \frac{E}{V}=\frac{3}{5}$$

$$\therefore WACC = 0.08\times(1-0.4)\times\frac{2}{5}+0.12\times\frac{3}{5}=9.12\%$$

26. Which of the following is NOT true about the P/E ratio?

A) A comparison of one company with its peers also involves a great deal of subjectivity regarding company-specific characteristics.
B) P/E ratios only work well on companies in the high growth stage of their lifecycle.
C) P/E ratios are uninformative when companies have negative or very small earnings.
D) The volatile nature of earnings implies a great deal of volatility in P/E multiples.

27. The steeper the slope of the security market line, the

A) Higher the risk-free rate of return.
B) Lower the risk-free rate of return.
C) Higher the market beta.
D) Higher the risk premium.
E) Lower the risk premium.

28. For a given effective annual rate, the quoted rate _____ as the compounding frequency increases.

A) Does not change.
B) Increases.
C) decreases.
D) either increase or decrease, depending on the effective rate.
E) None of the above.

Part II: Problems (30 Points Total)

- **Answer on this document, in the space provided.**
- Show all of your calculations.
- Write clearly! Part marks will be awarded (when deserved).

Q1: (10 Points)

Currently Toronto Dominion Bank is offering a mortgage with an interest rate of 8.6% (APR compounded semi-annually). This mortgage has a 25-year amortization life.

a. (2 Points) What is the effective monthly rate on this mortgage?

$$\textit{Effective monthly rate} = \left(1 + \frac{0.086}{2}\right)^{\frac{1}{6}} - 1 = 0.00704154 = 0.7042\%$$

```
........  2 points only if the student has the exact answer
........  1 Point if you see that the student is on the right
            track (this is left at instructor's discretion)
```

b. (3 Points) What are the monthly payments on a $200,000 mortgage under this contract?

$$200{,}000 = \frac{PMT}{0.00704154} \times \left(1 - \frac{1}{(1+0.00704154)^{300}}\right)$$

$$\therefore PMT = \$1{,}603.70$$

```
......  No penalty for carry over error (incorrect number in part a)
......  3 points only if everything done correctly
......  reduce 1 point for incorrect number of months
......  remaining part marks at instructor's discretion.
```

c. (2 Points) How much do you still owe three years after you took out this mortgage (i.e. immediately after you made your 36th monthly payment)?

$$\text{Outstanding Balance} = \frac{1603.70}{0.00704154} \times \left(1 - \frac{1}{(1+0.00704154)^{264}} \right) = \$192{,}025.70$$

```
...... No penalty for carry over error (incorrect numbers in parts a
       and/or b)
...... 2 points only if everything done correctly
...... reduce 1 point if used incorrect number of months
...... remaining part marks at instructor's discretion.
```

d. (3 Points) What is the principal portion of the 37th mortgage payment?

Payment=$1603.70

$Interest = 0.00704154 \times 192025.70 = \$1352.16$

Principal portion of payment $= 1603.70 - 1352.16 = \$251.54$

```
..... No penalty for carry over error
..... 3 points only if everything done correctly
..... part marks left at instructor's discretion.
```

Q2: (9 Points)

You are taking on a new 4-year project, which does not require any new investments in capital asset. The sales revenues from this project are expected to grow at 5% per year, starting with $20,000 in year one. Expected project costs are $5000 per year. Inventory will increase immediately by $10,000. Accounts receivable are expected to be 10% of revenues and accounts payable are expected to be 5% of costs, each year. Assume that all the net working capital will be recaptured in year 4. Your firm's tax rate is 40% and the WACC is 10%.

a) (5 point) Estimate cash flows (excluding depreciation tax shields) for each year (years 1, 2, 3 and 4)

Period	0	1	2	3	4
Sales		$20,000	$21,000	$22,050	$23,153
Costs		$5,000	$5,000	$5,000	$5,000
(S - C)x(1 - Tc)		$9,000	$9,600	$10,230	$10,892
Inventory	$10,000	$10,000	$10,000	$10,000	$10,000
A/R		$2,000	$2,100	$2,205	$2,315
A/P		$250	$250	$250	$250
NWC	$10,000	$11,750	$11,850	$11,955	$12,065
CF from ΔNWC (-ΔNWC)	-$10,000	-$1,750	-$100	-$105	-$110
NWC Recaptured					$12,065
Cash Flows	-$10,000	$7,250	$9,500	$10,125	$22,847

```
---- 1 Point for getting (S-C)X(1-Tc)
---- 2 Point for Change in NWC
---- 1 Point for correctly recapturing NWC
---- 1 Point for getting the final cash flow correctly
```

b) (2 point) What is the NPV of the project, excluding CCA tax shields?

Cash Flows	-$10,000	$7,250	$9,500	$10,125	$22,847
WACC	10%				
PV	-10000	6590.91	7851.24	7607.06	15604.47
NPV (Without TS)	$27,653.68				

Part marks left at instructor's discretion

c) (1 point) What is the present value of the CCA tax shields? Explain your answer in words.

Zero (No new investment)

d) (1 points) Should you accept or reject the project?

NPV = $27,653.68 >0

Therefore, Accept the project

Q3: (5 Points)

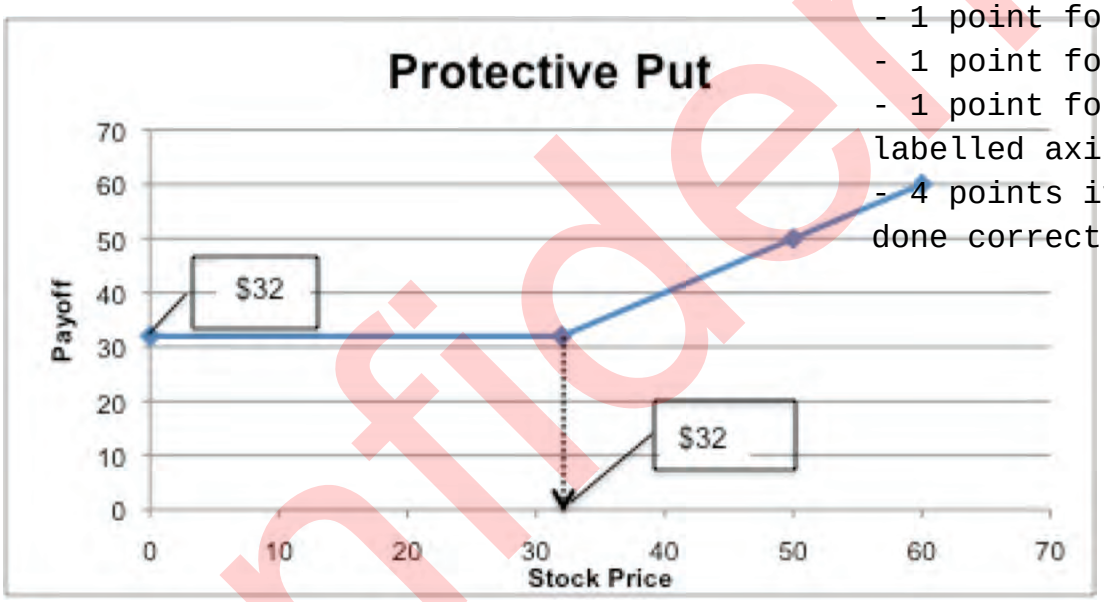
Important: when drawing payoff or profit diagrams, you need to show the location of each important point on the diagram by writing down the relevant numbers next to each point (i.e. indicate intersections with the horizontal and vertical axes and any points where the payoff/profit function changes abruptly).

Third Mug Inc. stock currently sells for $30 per share

Typo: Replace the word "profit" with the word "payoff"

a) (4 Points) Consider a put option on Third Mug Inc. stock with a strike price of $32 and time to expiration of one year. Draw the profit diagram for a protective put position (i.e. assume you own a share of Third Mug stock and you hold a put option as well).

Stock	0	32	50	60
Put	32	0	0	0
Protective Put	32	32	50	60



- 1 point for $32 on y-axis
- 1 point for $32 on x-axis
- 1 point for correctly labelled axis
- 4 points if everything done correctly

b) (1 Point) Consider a call option on Third Mug Inc. stock with a strike price of $35 and time to expiration of one year. This option sells for $2. Consider another call option on Third Mug Inc. stock with a strike price of $32 and time to expiration of one year. Do you expect the second option (strike $32) to be more or less expensive than the first option (strike $35) above? Why?

More Expensive. Lower strike price makes the call option more valuable.

Part marks left at instructor's discretion

Q4: (6 Points) Short Answers:

a) (2 points) What would be the implications of "unlimited liability" for stockholders?

Implications for shareholders:
Shareholder's unlimited liability would suggest that debt holders could go after stockholders' personal assets in case the firm is unable to meet its debt obligations (pay interest on its debt).

Implications for the firms:
With unlimited liability, investors would be very careful which stocks they invest in. In particular, they would not invest in companies, which they expect would be unable to satisfy its financial obligations. In such a situation, it would be very difficult for a young, untested business to raise capital in the stock market.

Note: The question asks only for the first part.

b) (2 points) Suppose your firm is going to finance a new project 100% with retained earnings. Your boss claims that since the earnings are already being retained and that since no outside financing is required, the project should be evaluated at the risk-free rate of return. Is this appropriate? Are retained earnings risk-free? Why or why not?

No.

1. Retained earnings essentially belong to equity holders and therefore the appropriate cost is the cost of equity.
2. The boss is basing the cost of capital only on the source of funds, and he is ignoring the risk of the new project (the use of the fund).

c) (2 points) Suppose your cousin invests in the stock market and doubles her money in a single year while the market, on average, earned a return of only about 15%. Is your cousin's performance a violation of market efficiency?

No, market efficiency does not preclude investors from "beating the market. " It is entirely possible to earn higher returns than the market at times. However, if your cousin is able to do so consistently, then there would certainly be some doubt cast upon market efficiency.

Equation List - Comm 308 - Booth-Cleary Text

5.3	Present Value of FV_n : $PV_0 = \frac{FV_n}{(1+k)^n}$
5.4	Future value of an annuity: $FV_n = \frac{PMT}{k}\left[(1+k)^n - 1\right]$
5.5	Present Value of an annuity: $PV_n = \frac{PMT}{k}\left[1 - \frac{1}{(1+k)^n}\right]$
5.8	Present value of perpetuity: $PV_0 = \frac{PMT}{k}$
5.10	Effective rate with continuous compounding: $k = e^{QR} - 1$
5.11	Effective rate: $k = \left(1 + \frac{QR}{m}\right)^{\frac{m}{f}} - 1$
5A-2	Present value of growing perpetuity: $PV_0 = \frac{PMT_0(1+g)}{k-g} = \frac{PMT_1}{k-g}$
5A-4	Present value of growing annuity: $PV_0 = \frac{PMT_1}{k-g}\left[1 - \left(\frac{1+g}{1+k}\right)^n\right]$
6.3	Current Yield: $CY = \frac{Annual\ Interest}{B}$
6.6	Price of T-Bill given BEY: $P = \frac{F}{\left(1 + k_{BEY} \times \frac{n}{365}\right)}$
7.10	Share price with growth opportunities: $P_0 = \frac{EPS_1}{k_c} + PVGO$
7.11	Growth rate: $g = b * ROE$
8.3	Total return = Income yield + Capital gain (loss) yield = $\frac{CF_1}{P_0} + \frac{P_1 - P_0}{P_0}$
8.5	Geometric average (GM) $= \left[(1+r_1)(1+r_2)(1+r_3)\times\cdots\times(1+r_n)\right]^{1/n} - 1 = \left(\prod_{i=1}^{n}(1+r_i)\right)^{\frac{1}{n}} - 1$
8.6	Expected return: $ER = \sum_{i=1}^{n}(r_i * \text{Prob}_i)$
8.7	Ex-post $\sigma = \sqrt{\frac{\sum_{i=1}^{n}(r_i - \bar{r})^2}{n-1}}$
8.8	Ex-ante $\sigma = \sqrt{\sum_{i=1}^{n}(\text{Prob}_i)(r_i - ER)^2}$
8.9	Expected portfolio return: $ER_p = \sum_{i=1}^{n}(w_i * ER_i)$
8.11	Portfolio standard deviation: $\sigma_P = \sqrt{(w_A)^2(\sigma_A)^2 + (w_B)^2(\sigma_B)^2 + 2(w_A)(w_B)(COV_{A,B})}$
8.12	$COV_{A,B} = \sum_{i=1}^{n}\text{Prob}_i(r_{A,i} - \bar{r_a})(r_{B,i} - \bar{r_b})$

8.14	$COV_{AB} = \rho_{AB}\sigma_A\sigma_B$
8.16	If $\rho_{AB} = -1$, then: $\sigma_P = w\sigma_A - (1-w)\sigma_B$
9.3	$E(R_P) = RF + \left(\frac{E(R_A) - RF}{\sigma_A}\right)\sigma_P$
9.4	Slope of CML $= \frac{ER_M - RF}{\sigma_M}$
9.6	Sharpe Ratio $= \frac{ER_P - RF}{\sigma_P}$
9.7	$\beta_i = \frac{Cov_{i,M}}{\sigma_M^2} = \frac{\rho_{i,M}\sigma_i}{\sigma_M}$
9.8	$\beta_P = w_A\beta_A + w_B\beta_B + \ldots + w_n\beta_n$
9.9	$k_i = RF + (ER_M - RF)\beta_i$
12.2	$Option$ Premium $= IV + TV$
12.5	Put Call Parity: $P + S = C + PV(X)$
13.1	$NPV = \frac{CF_1}{(1+k)^1} + \frac{CF_2}{(1+k)^2} + \frac{CF_3}{(1+k)^3} + .. + \frac{CF_n}{(1+k)^n} - CF_0 = \sum_{t=1}^{n}\frac{CF_t}{(1+k)^t} - CF_0$
13.3	$PI = \frac{PV(Cash\ \text{inflows})}{PV(Cash\ \text{outflows})}$
14.1	$CF_0 = C_0 + \Delta NWC_0 + OC$
14.2	$CF_t = CFBT_t(1-T) + CCA_t(T)$
14.4	$ECF_n = SV_n + \Delta NWC_n$
14.5	$NPV = PV(CF_t) + PV(ECF_n) - CF_0$
14.6	$PV(Operating\ Cash\ Flows) = \frac{CFBT(1-T)}{k}\left[1 - \frac{1}{(1+k)^n}\right]$
14.7	$PV(CCA\ Tax\ Shield) = \frac{(C_0)(d)(T)}{d+k} * \frac{(1+0.5k)}{(1+k)} - \frac{(SV_n)(d)(T)}{d+k} * \frac{1}{(1+k)^n}$
20.8	Cost of Capital: $K_a = \frac{ROI \times IC}{V} = \frac{K_e S + K_d(1-T)D}{V} = K_e\frac{S}{V} + K_d(1-T)\frac{D}{V}$
20.9	$WACC = K_e\frac{S}{V} + K_p\frac{P}{V} + K_i\frac{D}{V}$, Where: $K_i = K_d(1-T)$
20.10	Market value: $S = P_0 \times n$
20.13	Net proceeds: $NP = \frac{I(1-T)}{K_i}\left[1 - \frac{1}{(1+K_i)^n}\right] + F\left(\frac{1}{(1+K_i)^n}\right)$
20.14	Cost of preferred shares: $K_p = D_p \Big/ NP$
20.17	$K_{ne} = \frac{D_1}{NP} + g$
20.21	$K_e = \frac{D_1}{P_0} + g = \frac{X_1(1-b)}{P_0} + b * ROE$
20.27	Cost of new equity: $K_{ne} = K_e * \frac{P_0}{NP}$