

*Multiple Choice: Answer on the computer answer sheet
Problems: Answer in the Space Provided on This Exam*

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|--|---------------------------------|---|--|
| Print Last Name: ➔ | Print First Name: ➔ | ID Number: ➔ | |
| COURSE FINANCE | NUMBER COMM 308/2 | SECTIONS: (➔ Circle your section) | |
| EXAMINATION Final Exam VERSION BLUE | DATE December 8, 2008 | TIME 3 hours | # OF PAGES 20 including cover/crib |
| INSTRUCTOR: (➔ Underline your instructor's name) A. Ahmad R. Jassim M. Wahhab J. Riley S. Ullah | | DIVISION John Molson School of Business Concordia University | |

SPECIAL INSTRUCTIONS

- **You are writing Version BLUE of the test. Please ensure that you have a BLUE computer answer sheet. Your exam consists of two types of questions: Multiple Choice Questions and Problems.**
 - **Multiple Choice Questions:**
 - **All your answers must be recorded IN PENCIL on the BLUE computer answer sheet by darkening the appropriate letter corresponding to your choice.**
 - **Problems:**
 - **All your answers must be recorded on the exam sheets. Show your calculations. Part marks will be awarded. Write clearly and only in the space provided.**
- Cell phones must be turned off, programmable calculators and PDAs are not allowed during the final exam.
- This exam contains **16** pages including cover. Formula sheets (3) are separate. Please ensure that there are no pages missing.
- Fill in your name and other required information **IN PENCIL** on the Computer Answer sheet as well as on this cover sheet.
- There is no negative marking on the multiple choice questions. Mark only one answer on the computer answer sheet. Blank questions or those with multiple answers will not receive credit.
- Small differences may exist due to rounding. To minimize this problem, try to round only at the end of multiple-step calculations.
- **A minimum of 40% on this exam is required to pass this course.**
- Allocate your time efficiently.

SCORES (FOR INTERNAL USE ONLY)

| Multiple Choice Questions | Long Answer Questions | | | | Total |
|---------------------------|-----------------------|------------------|------------------|-----------------|-------|
| | Question 1 | Question 2 | Question 3 | Question 4 | |
| (Max: 70 Points) | (Max: 4 Points) | (Max: 10 Points) | (Max: 10 Points) | (Max: 6 Points) | |
| | | | | | |

Multiple Choice: Answer on the computer answer sheet

Part I: Multiple Choice Questions (25 Questions, 70 Points Total):

- This part consists of 10 concept questions and 15 calculation problems.
- Each concept question counts 2.5 points for a total of 25 points and each calculation problem counts 3 points for a total of 45 points.
 - **Only answers on the computer answer sheet will be graded.**
 - **Use a pencil to mark your answers.**
 - Select only one answer per question, blank or multiple answers will not receive credit.
 - You are encouraged to also circle your answer on the exam sheet as a back up.

A. Concept Questions (10 Questions, 2.5 Points Each)

1. Which of the following are true when a firm is operating at its target capital structure point?
 - I. The WACC is at its minimum point.
 - II. The debt-equity ratio is equal to 1.
 - III. Shareholder value is maximized.
 - IV. The total value of the firm is maximized.

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

2. A decrease in which of the following will increase the value of a put option?
 - I. Exercise price
 - II. Time to expiration
 - III. Variance of return of the underlying asset
 - IV. Current value of the underlying security

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

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3. Suppose the Canadian Space Agency has two mutually exclusive projects: landing a woman on Mars and landing a man on Venus. Project Mars has an IRR of 12 percent and project Venus has an IRR of 15 percent. The crossover rate is 9 percent. The appropriate discount rate for both projects is 18 percent.

- A) Accept project Mars.
- B) Accept project Venus.
- C) Accept both projects.
- D) **Accept neither project.**
- E) Insufficient information to make a decision.

4. Given the following information, which investment(s) would risk averse investors prefer if the risk free rate is 5 percent?

| Investment | Cost Today | Value of Investment after one year if: | |
|------------|------------|--|--|
| | | Market Return > 0% Probability: 40% | Market Return < 0% Probability: 60% |
| I | \$18 | \$36 | \$8 |
| II | \$14 | \$12 | \$16 |
| III | \$15 | \$30 | \$5 |

- A) **I only**
- B) II only
- C) III only
- D) I and II only
- E) I and III only

5. Use the following two statements to answer this question:

- I. The Dividend Discount Model (DDM) assumes that common shares are valued according to the present value of their expected future dividends.
- II. The DDM argues that the selling price at any point (say, time n) will equal the present value of all the expected future dividends from period n to infinity. For example: the selling price on January 15, 2010 will equal the present value of all the expected future dividends from January 15, 2010 until infinity.

- A) I is incorrect, II is correct.
- B) **I is correct, II is incorrect.**
- C) I and II are incorrect.
- D) I and II are correct.

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6. 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) Any of the three (I, II or III) can be correct
 - E) I, II and III are all incorrect
7. If markets were semi-strong form efficient, which of the following situations would yield abnormal returns?
- A) Analyzing a company's earnings report
 - B) Identifying a pattern in a company's stock price
 - C) Obtaining insider information
 - D) None of the above would yield abnormal returns
8. 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? Assume that the interest rate is greater than zero and less than 20%.
- 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

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(Omit Question 9)

9. The KatPat Co operates in a world with zero taxes and there is no risk of financial distress. Currently the firm has a D/E ratio of 3.5, a cost of debt of 8% and a cost of equity of 15%. Jago, a junior analyst, states that if the firm increases their use of debt their WACC should decrease. Jago is:
- A) Correct because as we increase the use of debt the WACC should decrease as we are increasing our use of a cheaper source of capital (cost of debt < cost of equity).
 - B) Correct because according to M&M the value of the firm is unchanged as we increase the level of debt but the net income of the firm will decline (due to increased interest payments). The only way the value of the firm can remain the same is if the WACC decreases.
 - C) Incorrect because as we increase the use of debt we increase the riskiness of the equity and therefore the cost of equity will increase. The net effect is that the WACC remains constant.
 - D) Incorrect because the firm's D/E ratio is already above the firm's optimal level and any further increase in debt will result in an increase in WACC and a decrease in firm value.
10. Which of the following would be considered relevant cash flows in a capital budgeting evaluation?
- I. Tax savings due to increased depreciation expense.
 - II. Increased expenditures on inventory for the new project.
 - III. Cost of the feasibility survey which was conducted two months ago.
- A) I only
 - B) I and II.
 - C) I and III.
 - D) II and III
 - E) I, II and III

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B. Calculation Multiple Choice Problems (15 Questions, 3 Points Each)

- 11.** On March 15, 2008, XYZ bought a machine for \$50,000. XYZ plans to use this machine for 5 years, at the end of which they expect to sell it for \$2000. The machine is in class 43 with a CCA rate of 30%. Assuming that the machine is the only asset in the class, what is the UCC (undepreciated capital cost) for the machine class on January 1, 2010? Assume fiscal year is from January to December.
- A) \$19,992
 - B) \$20,825
 - C) \$28,560
 - D) **\$29,750**
- 12.** An account was opened with \$1,000 ten years ago. The account paid interest at a rate of 10% compounded quarterly. What is the value of the account today?
- A) \$1,464.10
 - B) \$2,593.74
 - C) **\$2,685.06**
 - D) \$7,039.99
 - E) \$45,259.26
- 13.** The James Co. plans on saving money to buy some new equipment. The company is opening an account today with a deposit of \$15,000 and expects to earn 4% interest. After 3 years, the firm wants to add an additional \$50,000 to the account. If the account continues to earn 4%, how much money will the James Co. have in their account five years from now?
- A) \$66,872.96
 - B) \$68,249.79
 - C) \$70,952.96
 - D) **\$72,329.79**
 - E) \$79,082.44

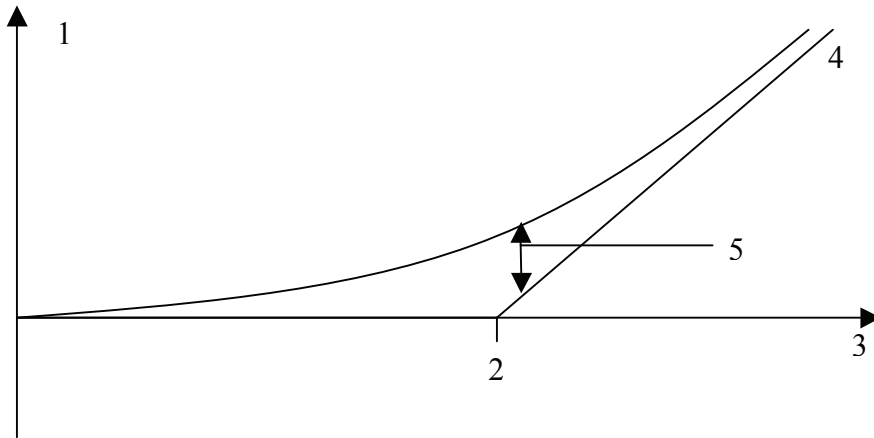
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- 14.** The stock of SuperGrowth, Inc. just paid a dividend of \$0.78. The dividend next year is expected to be \$0.87. What is the expected capital gains yield if the stock is selling for \$28.25 today and the required rate of return is 15 percent?
- A) 10.73%
 - B) 11.92%
 - C) 12.24%
 - D) 13.62%
 - E) 15.00%
- 15.** A ten-year zero coupon bond with a face value of \$1,000 is currently quoted at 48.72. Assume the bond's YTM remains unchanged throughout the bond's term to maturity. What should the bond be sold for three years from now?
- A) \$487.20
 - B) \$594.19
 - C) \$604.50
 - D) \$805.96
- 16.** You have done a thorough study of the economy and Stock X and have concluded: (1) the probability of having a boom next year is 20 percent, a stable economy is 55 percent, and a recession is 25 percent, and (2) the price of Stock X will be \$45 if there is a boom, \$25 if the economy is stable, and \$15 if there is a recession. You plan to buy one unit of Stock X today and sell it next period. What is the expected holding period return on Stock X if it is currently selling for \$24?
- A) -10.00%
 - B) 10.42%
 - C) 1.05%
 - D) 11.11%

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17. You have observed the following annual returns for Motherboard, Inc: 25%, 15%, -20%, 30%, and -15%. What are the variance and standard deviation of returns?
- A) Variance = 0.00425; standard deviation = 0.06519
 - B) Variance = 0.06519; standard deviation = 0.00425
 - C) Variance = 0.05325; standard deviation = 0.23076
 - D) Variance = 0.23076; standard deviation = 0.05325
18. Green Compost Inc.'s current operations will generate cash flows of \$100,000 in year one, \$115,000 in year two, and \$125,000 in year three. The company is considering a new investment, which requires an immediate cash outlay of \$300,000. With the new investment, the company can instead expect to have cash flows of \$250,000 per year for the next three years. The appropriate discount rate is 15 percent. Assuming no taxes, what is the NPV of the new investment?
- A) \$14,703.71
 - B) \$65,439.36
 - C) \$256,107.57
 - D) \$270,806.28
19. An analyst has obtained the following information about the Velo Co.: Book value of assets \$25,000; book value of common equity \$10,000; book value of preferred stock \$5,000. The company has 4,000 common shares outstanding which are currently trading at \$5 per share. The company has 3,000 preferred shares outstanding which are currently trading at \$2 per share. The yield on the debt equals the coupon rate. The weights used to determine the weighted average cost of capital are:
- | Common Equity: | Preferred Equity: | Debt: |
|---|-------------------|--------|
| A) 55.56% ; | 16.67% ; | 27.78% |
| B) 40.00% ; | 20.00% ; | 40.00% |
| C) 23.52% ; | 17.65% ; | 58.82% |
| D) Cannot be determined, we need the market value of debt | | |

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20. The points numbered 1 to 5 on the above diagram correspond to:

| | Time value | Underlying asset value | Strike price | Intrinsic value of a call | Payoff / profit / option value |
|-----------|------------|------------------------|--------------|---------------------------|--------------------------------|
| A) | 1 | 2 | 3 | 4 | 5 |
| B) | 5 | 3 | 2 | 4 | 1 |
| C) | 5 | 3 | 2 | 1 | 4 |
| D) | 4 | 1 | 2 | 5 | 3 |
| E) | 5 | 1 | 2 | 4 | 3 |

(Omit Question 21)

21. A firm has a tax rate of 35%, an unlevered rate of return of 14%, total debt of \$1,000, and a perpetual EBIT of \$300.00. What is the unlevered value of the firm?

- A) \$195
- B) \$393
- C) **\$1,393**
- D) \$1,743
- E) \$2,143

22. JoBo's is a 100% equity financed firm with a tax rate of 34% and a WACC of 13%. The company can borrow money at a current rate of 8%. EBIT is \$24,500 annually. What is the current cost of equity?

- A) 8.58%
- B) 10.50%
- C) 12.67%
- D) **13.00%**
- E) 18.00%

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23. The following information was reported last year:

| | Beginning | Ending |
|---------------------|-----------|----------|
| Accounts receivable | \$65,250 | \$75,338 |
| Accounts payable | \$42,362 | \$55,124 |
| Inventory | \$51,225 | \$63,037 |

What was the effect of the above change on the firm's cashflow for the year?

- A) **-\$9,138**
- B) -\$34,662
- C) \$9,138
- D) \$34,662

24. Diane has \$2,500 to invest. The expected return on the market portfolio is 11 percent with a standard deviation of 15 percent. What are the expected return and standard deviation for the portfolio if Diane borrows an additional \$1,000 at the risk free rate of 4 percent and invests everything in the market portfolio?

- A) Expected return = 19.40%; standard deviation = 15.40%
- B) Expected return = 15.40%; standard deviation = 19.40%
- C) **Expected return = 13.80%; standard deviation = 21.00%**
- D) Expected return = 21.00%; standard deviation = 13.80%

25. Biogenetics, Inc. plans to retain and reinvest all of their earnings for the next 30 years.

Beginning in year 31, the firm will begin to pay a \$20 per share dividend. The dividend will decrease at a 1% rate annually thereafter. Given a required return of 15%, what should the stock should sell for today?

- A) \$1.46
- B) **\$1.89**
- C) \$2.16
- D) \$2.80
- E) More than \$20 per share

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Part II: Problems (Total: 30 Points)

- 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.

Problem 1. (4 points) A furniture manufacturer is planning on buying a new industrial sander costing \$118,000 and belonging in a 30% CCA class. The firm expects to have many assets in the class for the next 25 years. The sander has projected maintenance costs of \$16,000 annually over the three-year life of the sander. At the end of the three years, the sander will be worthless and will be scrapped. The company pays no taxes and uses a 16% discount rate to evaluate projects. What is the equivalent annual cost?

$$\text{PV of maintenance costs} = \frac{16000}{1.16^1} + \frac{16000}{1.16^2} + \frac{16000}{1.16^3} = 35934.232 \quad \dots (1 \text{ point})$$

$$\text{Total PV} = 118,000 + 35,934 = \$153,934 \quad \dots (1 \text{ point})$$

$$\text{Equivalent annual cost: } \$153,934 = \frac{C}{0.16} * \left(1 - \frac{1}{1.16^3}\right)$$

$$C = \$68,540.43 \quad \dots (2 \text{ point})$$

Answer: \$68,540.43

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Problem 2. (10 points) Miscellaneous Products Inc. (MP) has hired you to calculate their cost of capital. MP has 50,000 perpetual¹ bonds outstanding, with a coupon rate of 7.6%, semi-annual coupons and a face value of \$1,000. The current price of MP Inc.'s bonds is \$950. Miscellaneous Products has 5,000,000 shares of stock outstanding and the current stock price is \$11. The beta of MP Inc. common stock is 1.1. The expected return on S&P/TSX Composite market index returns is 10% and the risk free rate is 4%. The effective marginal corporate tax rate is 40%.

a. (3 points) What is Miscellaneous Products' cost of equity?

Have to use CAPM ... (1 point)

Recognize market return = 10% ... (1 point)

$4\% + 1.1 \cdot (10\% - 4\%) = 10.6\%$... (1 point)

Answer: 10.6%

b. (3 points) What is MP Inc.'s after-tax cost of debt?

$950 = (76/2)/r \rightarrow r$ (semi annual rate) = 4% ... (1 point)

Annual = (1.04) squared \rightarrow 8.16% pre-tax ... (1 point)

After tax cost of debt = $(1-0.4) \cdot 0.0816 = 0.04896$... (1 point)

Answer: 4.896%

¹ Perpetual bonds never mature or expire and MP Inc. will continue to make coupon payments of these bonds forever.

Problems: Answer in the Space Provided on This Exam

c. (4 points) What is MP Inc.'s weighted average cost of capital (WACC)?

Value of bonds = 47.5 million ; value of equity = 55 million

Equity weight = $55/(55+47.5)$... (1 point)

Bond weight = $47.5/(55+47.5)$... (1 point)

WACC = $(55 * 10.6 + 47.5*4.896) / (47.5+55) = 7.96$... (2 point)

Answer: 7.96%

Problems: Answer in the Space Provided on This Exam

Problem 3. (10 marks) Willie’s Widgets currently operates a machine that was purchased at a cost of \$270,000 three years ago. Its current market value is \$180,000. An improved version of the equipment is now available for \$300,000. Both machines belong to CCA class 10 (CCA rate = 30%) and have an expected remaining useful life of three years. In three years the older machine will be worth \$25,000 while the new machine will be worth \$190,000. The company currently has many class 10 assets and management believes that there will be many class 10 assets in three years.

The new machine will increase annual sales by \$100,000 but annual costs will increase by \$50,000. The following Table shows the typical net working capital requirements for Willie’s Widgets as a percentage of the sales revenue for that year (the same percentages would apply to the additional sales generated by the new machine):

| | |
|---------------------|----|
| Inventory | 6% |
| Accounts Receivable | 4% |
| Accounts Payable | 5% |

Willie’s Widgets has a cost of equity of 12% and a weighted average cost of capital (WACC) of 10%. The effective marginal corporate tax rate is 40%.

Calculate the NPV for this replacement decision. Should Willie’s Widgets implement this project?

| | | | | | |
|----------------|-------------|------------|------------|------------|---------------|
| New Machine | 300,000.00 | | | | |
| Old Machine | 180,000.00 | | | | |
| Net New Asset | 120,000.00 | | | | |
| Salvage New | 190,000.00 | | Inventory | 0.06 | |
| Salvage Old | 25,000.00 | | A/R | 0.04 | |
| Net Salvage | 165,000.00 | | A/P | 0.05 | |
| Tax Rate | 0.40 | | | | |
| WACC | 0.10 | | | | |
| CCA Rate | 0.30 | | | | |
| | 0 | 1 | 2 | 3 | |
| Sales | | 100,000.00 | 100,000.00 | 100,000.00 | |
| Cost | | 50,000.00 | 50,000.00 | 50,000.00 | |
| OCF(1-Tc) | | 30,000.00 | 30,000.00 | 30,000.00 | ... (1 point) |
| Inventory | | 6,000.00 | 6,000.00 | 6,000.00 | |
| A/R | | 4,000.00 | 4,000.00 | 4,000.00 | |
| A/P | | 5,000.00 | 5,000.00 | 5,000.00 | |
| NWC | | 5,000.00 | 5,000.00 | 5,000.00 | |
| Change in NWC | | -5,000.00 | - | - | ... (1 point) |
| NWC recaptured | | | | 5,000.00 | ... (1 point) |
| Investment | -120,000.00 | | | 165,000.00 | |
| CF | -120,000.00 | 25,000.00 | 30,000.00 | 200,000.00 | ... (1 point) |
| PV CF | -120,000.00 | 22,727.27 | 24,793.39 | 150,262.96 | |
| PV OCF | 77,783.62 | | | | ... (2 point) |
| PV TS | -2,826.45 | | | | ... (2 point) |
| NPV | 74,957.18 | | | | ... (1 point) |

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Answer:

NPV =74,957.18

Decision: Take the project ... (1 point)

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(Omit Question 4(a))

Problem 4. (a). (3 points) As an individual investor in a Canadian company living in Canada, which would you prefer:

I. To receive cash dividends

Or

II. For the company to use the cash to repurchase shares

Why? Explain briefly!

- Depends on investors' tax bracket:
 - Higher tax bracket would prefer repurchase (lead to capital gain)
 - Others prefer Dividends

... (Open-ended question. I have given above a suggested answer. Grading is left at instructor's discretion)

4. (b). (3 Points) Apple computers announced positive first quarter earnings for the financial year 2008-2009. However, Apple share price fell the following day. This is an evidence of irrational financial market (Evidence against efficient market hypothesis). Why? Why not?

- It is not an evidence against EMH
 - The market was expecting higher earnings.

... (1 point)

... (Reason: 2 point)