Print Last Name:	Print First Name:	ID Number:	
COURSE FINANCE	**NUMBER** COMM 308/2	**SECTION** All sections	
EXAMINATION Final Exam **VERSION BLUE**	**DATE** DECEMBER 8, 2007	**TIME** 3 hours	**# OF PAGES 15** including cover, formula sheets separate
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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. Only letters A, B, C, D and E should be used. DARKENING ANY OTHER LETTER WILL RESULT IN AN INCORRECT RESPONSE BEING RECORDED FOR THAT QUESTION.

  - Problems:

  - All your answers must be recorded on the exam sheets. 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 **15** 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.

For use by instructor		
	Maximum	**Grade**
Multiple choice questions	**60**	
Problem 1	**10**	
Problem 2		
Part a	**2**	
Part b	**3**	
Part c	**5**	
Problem 3	**10**	
Problem 4	**5**	
Problem 5	**5**	
Total	**100**	

Multiple Choice Questions (2 marks per question):

- Only answers on the computer answer sheet will be graded.

- 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.

Question 1: My exam is the _____ version:

A) Blue
B) Green

Note: you will not receive 2 marks for answering this question correctly; it is to help identify any answer sheets that are mishandled in the grading process. If you answer it incorrectly, you will receive a very low mark on the final exam!!!!

Question 2: Common shares include which of the following characteristics:

I. The right to vote for the board of directors
II. Right to receive income before any creditors
III. Company has no legal obligation to pay dividend

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

Question 3: The exchange that acts as the Canadian national derivatives market and conducts all options and futures trading is called the:

A) Winnipeg Commodity Exchange
B) Toronto Stock Exchange
C) Canadian Trading and Quotation System Inc.
D) Bourse de Montreal (The Montreal Exchange)

Question 4: You are evaluating an investment in a mine. The mine will require an investment of $10 million today and is expected to generate revenues of $5 million per year for 5 years. At the end of the life of the mine, you will have to pay $25 million to clean up the site. Ignore taxes. Using the IRR to evaluate this project is:

A) Not appropriate because the sign of the cash flows change more than once
B) Not appropriate because the sum of the cash flows is negative
C) Appropriate because the sign of the cash flows changes more than once
D) Appropriate because the sign of the IRR is negative

Question 5: The RobM Bank has offers you the choice between two loans:
#1 charges interest at a rate of 9% compounded quarterly
#2 charges interest at a rate of 9.05% compounded semi-annually
Which loan do you prefer and why?

A) #1, lowest effective annual rate
B) #2, lowest effective annual rate
C) #1, highest effective annual rate
D) #2, highest effective annual rate

#1 effective annual rate = $(1+.09/4)^4 - 1 = 9.3083\%$;
#2 effective annual rate = $(1+.0905/2)^2 - 1 = 9.2548\%$
As this is a loan, I want the lowest rate.

Question 6: When computing the yield to maturity, the implicit reinvestment assumption is that the reinvested coupons are reinvested at the _____.

A) coupon rate.
B) prevailing yield to maturity at the time the coupons are received.
C) average yield to maturity over the life of the bond.
D) yield to maturity at the time of the investment.

Question 7: Which of the following features of a bond are determined by the issuer following the advice of the underwriter:
I. price
II. coupon
III. time to maturity
IV. yield to maturity

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

Question 8: The concept of a strong form efficient market implies that:

A) All shares of stock have the same expected returns.
B) Throwing darts at a page of stocks will yield the same return as a carefully selected portfolio.
C) Prices reflect all available information.
D) Stock prices do not fluctuate.

Question 9: You are considering mutually exclusive projects: Burnout and Longlasting. Burnout requires an initial investment of $36, has a 3 year life, and will have revenues of $100 per year. Longlasting requires an investment of $60, has a 5 year life, and will have revenues of $88 per year. The salvage value is zero in either case. Your tax rate is 30% and required return is 10%. You must choose between the two and expect to replace them forever. You should:

A) Take the option with the greater positive NPV
B) Take the option with the smaller positive NPV
C) Take the option with the greater positive EANPV (equivalent annual Net Present Value)
D) Take the option with the smaller positive EANPV

Question 10: The appropriate discount rate to be used when analyzing an investment project is _____

A) the rate of return that will results in the highest NPV
B) the internal rate of return on that investment
C) equal to the cost of capital based on the firm's existing assets
D) the rate of return financial markets offer on investments of similar risk
E) the rate of interest the firm would pay if it sold bonds

Question 11: Which of the following is a **FALSE** statement of the Sharpe ratio?

A) It is used to assess the performance of portfolios.
B) The Sharpe Ratio of a portfolio equals the beta of the portfolio
C) It describes how well an asset's return compensates investors for the risk taken.
D) It is a "risk-adjusted" measure of portfolio performance.

Question 12: If a company uses the same discount rate to evaluate all projects, the firm will most likely become

A) riskier over time, and its value will fall
B) riskier over time, and its value will rise
C) less risky over time, and its value will rise
D) less risky over time, and its value will decline
E) there is no reason to expect its risk position or value to change over time as a result of its use of a single discount rate.

Question 13: The M&M theory of capital structure without taxes states that:
(Omit This Question)

A) a firm can affect its value by changing its capital structure
B) the cost of equity decreases as the financial leverage increases
C) the WACC increases as financial leverage decreases
D) the value of the firm is determined by its total cash flows

Multiple Choice: answer on the Computer Sheet

(Omit Question 14)

Question 14: The KatPat Co operates in a world with zero taxes and 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.

(Omit Question 15)

Question 15: The SylliPutty and FoolishFudge Companies operate in a world with taxes and no financial distress. SylliPutty has a debt/equity ratio of 1. The cost of equity to SylliPutty is 15% and the cost of debt is 8%. The only difference between the FoolishFudge Company and SylliPutty is that FoolishFudge has a debt/equity ratio of 2. According to M&M, the weighted average cost of capital for FoolishFudge should be:

A) Less than the weighted average cost of capital for SylliPutty
B) The same as the weighted average cost of capital for SylliPutty
C) Greater than the weighted average cost of capital for SylliPutty
D) Cannot be determined, we need to know the tax rate.

Question 16: If a stock is selling for $45 per share at the expiration of an option contract, who of the following will choose to exercise their option?

A) Buyer of a call option with $50 strike price
B) Seller of a call option with $50 strike price
C) Buyer of put option with $70 strike price
D) Seller of a put option with a $70 strike price
E) (a) and (c) are correct

Question 17: Xiang invests $25,000 per year, starting today, for 20 years at an interest rate of 7%. What is the value of the investment at the end of the 20 years?

A) $264,850.36
B) $283,389.88
C) $1,024,887.31
D) $1,096,629.42

FV of 20 year annuity due.

Question 18: Eight percent compounded semi-annually is equivalent to what percentage compounded monthly?

A) 7.87%
B) 8.00%
C) 8.30%
D) 8.57%

Monthly rate: $\left[\left(1+.08/2\right)^{2}\right]^{1/12}-1=0.6558\%$

The rate, compounded monthly, = 12*0.6558%=7.8698%

Question 19: Amir has obtained a $250,000 mortgage. The mortgage is amortized over 25 years and is renewed every 5 years. The mortgage interest rate is 9% compounded semi-annually. Amir will begin making monthly payments at the end of the month. The monthly payment is closest to:

A) $2,069.94
B) $2,097.99
C) $5,169.68
D) $5,189.59

Monthly rate = $\left(1+.09/2\right)^{\frac{2}{12}}-1=0.7363\%$

Solve for payments for ordinary annuity of 25*12 = 300 monthly payments and face = $250,000. Payment = $2,069.94

Question 20: What is the Yield-to-Maturity (market rate) of a four-year annual pay bond with a par value of $1,000 and a 4 percent coupon rate when the bond is priced at $932.35?

A) 2.96%
B) 3.85%
C) 5.95%
D) 11.90%

By logic, can eliminate A and B; and as price is close to par, more likely to be 5.95% than 11.90%.

Question 21: What is the holding period return of a 9% annual coupon bond with a face value of $1000 and with five years to maturity if it is purchased at the beginning of year 1 at a Yield-to-Maturity (market rate) of 6.0% and sold at the beginning of year 2? Assume that rates do not change.

A) 7.4%
B) 7.1%
C) 6.8%
D) 6.0%
E) None of the above

If student understands YTM and notes that the YTM didn't change, the answer is 6%. Can also solve long way:

Purchase price: $1,126.3709
Sale price: $1,103.9532
Return = (1,103.9532+90-1,126.3709)/1,126.3709 = 6%

Question 22: Never-On-Time Transportation Inc. has issued $2.5 million in preferred shares with a par value of $20 each and an annual dividend rate of 8.25 percent. The market value of the preferred shares is _____ if the required rate of return is 12 percent.

A) $3.64 million
B) $1.72 million
C) $17.19 million
D) $34.38 million

$$P_s = \frac{D}{k_s} = \frac{0.0825 * 20}{.12} = \$13.75 \text{ per share.}$$

Market value of preferred stock = $2.5 million / $20 * $13.75 = $1,718,750.

Question 23: SlowGrowth, Inc. is expected to pay a dividend of $1 in one year. If the dividend growth rate is 2 percent forever and the required return is 10 percent, what should the stock be sold for five years from now?

A) $13.53
B) $13.80
C) $14.08
D) $14.62

$$P_5 = \frac{D_6}{k-g} = \frac{D_1(1+g)^5}{k-g} = \frac{1(1+.02)^5}{.10-.02} = \frac{1.10408}{.08} = \$13.80$$

Question 24: Canadian Resources is expected to pay a dividend of $2 in the upcoming year. The risk free rate of interest is 4% and the expected return on the market portfolio is 14%. Analysts expect the price of Canadian Resources to be $22 in one year. The beta of Canadian Resources stock is 1.25. What is the intrinsic value of Canadian resources stock today?

A) $12.12
B) $20.00
C) $20.60
D) $22.00
E) None of the above

Required rate of return = 4% + 1.25*(14% - 4%) = 16.5%
Intrinsic value of CR today = (22+2)/1.165 = $20.60

Question 25: Snape's Elixers expects to pay dividends at the end of each of the next four years of $2.00, $1.50, $2.50, and $1.50 respectively. Starting at the beginning of year 5, dividend growth is expected to remain constant at 7%. If you require a 10% rate of return, what is the price of Snape's Elixers today?

A) $39.12
B) $42.50
C) $53.50
D) $61.00

$$P_0 = \frac{2.00}{1.1} + \frac{1.50}{1.1^2} + \frac{2.50}{1.1^3} + \frac{1.50 + \left(\frac{1.50*1.07}{.10-.07}\right)}{1.1^4}$$
$$= 1.8182 + 1.2397 + 1.8783 + \frac{1.5 + 53.5}{1.1^4}$$
$$= 4.936 + 37.5657$$
$$= \$42.50$$

Question 26: 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 replacing their current setup with 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. What is the NPV of the new investment? Assume that there is no salvage value and no tax considerations.

A) $14,703.71
B) $65,439.36
C) $256,107.57
D) $270,806.28

Incremental Annual cash flows:
Year 0: -$300,000
Year 1: $250,000-$100,000 = $150,000
Year 2: $250,000-$115,000 = $135,000
Year 3: $250,000-$125,000 = $125,000
NPV @ 15% = $14,703.71

Question 27: 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%

Cross-over rate = rate at which NPV projects are equal.

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

$$50,000 = \frac{3,000}{i}$$

$$i = 6\%$$

Question 28: The expected return of Security A is 12 percent with a standard deviation of 15 percent. The expected return of Security B is 9 percent with a standard deviation of 10 percent. Securities A and B have a correlation of 0.4. The market return is 11 percent with a standard deviation of 13 percent and the risk free rate is 4 percent. What is the Sharpe ratio of a portfolio if 35 percent of the portfolio is in Security A and the remainder in Security B?

A) 0.54
B) 0.61
C) 0.86
D) 1.02

Variance of portfolio:

$$= .35^2 15^2 + .65^2 10^2 + 2 * .35 * .65 * .4 * 15 * 10$$
$$= 27.5625 + 42.25 + 27.3$$
$$= 97.1125\%^2$$

$$\text{Sharpe Ratio} = = \frac{(.35*12 + .65*9) - 4}{\sqrt{97.1125}} = \frac{10.05 - 4}{9.8546} = 0.6139$$

Question 29: The risk free rate is 4.5 percent. The expected return on the market is 13 percent with a standard deviation of 15 percent. What is the required rate of return for Stock X if it has a beta of 1.4?

A) 16.40%
B) 18.20%
C) 20.50%
D) 22.70%

= 4.5% +1.4*(13% - 4.5%) = 16.4%

Question 30: The Excello Company currently has a policy of paying out 30% of its earnings in dividends. Currently the market is expecting a return on equity if 10%. The firm has just paid a dividend of $1 and the current stock price is $10. The required rate of return on Excello stock is:

A) 10.0%
B) 13.3%
C) 17.0%
D) 17.7%
E) 18.1%

growth rate = b*ROE = (1-.3)*10% = 7%

$$\$10 = \frac{1*1.07}{k - .07}$$

$$10k - .7 = 1.07$$

$$k = \frac{1.07 + .7}{10}$$

$$= 17.7\%$$

Question 31: On December 7, 2007 The Tiny Company's stock will go ex-dividend. The dividend is $1.50 and is expected to grow at a rate of 4% forever. The required rate of return for the Tiny Company is 6%. The stock price on December 8 is closest to ____ and the stock price on December 6 is closest to _____.

A) $76.50; $78.00
B) $78.00; $76.50
C) $78.00; $79.50
D) $79.50; $78.00
E) None of the above

Price after dividend paid (Dec 8) =

$$\frac{1.50*1.04}{.06 - .04} = \$78$$

Price before dividend paid (Dec 6) = $78+1.50 = $79.50

Problems:

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

Problem 1. (10 marks) Michael the MBA has come to you for help – he is preparing an analysis of a long term investment and is unclear how to deal with the following items (the first has been done for you).

Item	Exclude/include in the analysis	Inflow/outflow or not applicable (N/A)	Explanation/reason
For example: Maintenance costs	Include	Outflow	This is a cash expense associated with the project.
Interest expense associated with the purchase of the new machine	Exclude	N/A	Interest expenses are taken into account in the cost of capital. Including them in the NPV analysis will result in double counting.
Increase in accounts receivable	Include	Outflow	Increasing accounts receivable is a use of cash (opportunity cost) – we are delaying the receipt of cash from the sale of goods.
Cost of renovations carried out 2 months ago	Exclude	N/A	Sunk costs are not considered in decision making – we evaluate the present value of the future cash flows and compare to the current cost.
Decrease in marketing expenses of current products caused by new project	Include	Inflow	The decrease in expenses caused by the project is a benefit to the project and needs to be considered.

Problems: Answer in the space provided on this exam

(Omit Question 2)

Problem 2. (10 marks) Dumbledore Corporation expects an EBIT of $125,000 every year forever. Dumbledore currently has no debt, and its cost of equity is 12%. The corporate tax rate is 25%. The firm can borrow perpetual debt at 5%. The Dumbledore Corporation has 10,000 shares outstanding and there is no risk of financial distress.

a. What is the value of the firm with zero debt? (2 marks)

$$\frac{EBIT(1-T)}{k_e} = \frac{125,000*0.75}{.12} = \$781,250$$

$781,250

b. Dumbledore issues $100,000 of debt and used the proceeds to repurchase stock.

i. What is the new value of Dumbledore? Show your work. (3 marks)

$$V_L = V_U + D*T = 781,250 + 100,000*.25 = \$806,250$$

$806,250

ii. What is the weighted average cost of capital of Dumbledore? Show your work. (5 marks)

$$\$806,250 = \frac{EBIT(1-T)}{WACC} = \frac{93,750}{WACC} \qquad WACC = 11.6279\%$$

Long way:

$$K_e = K_U + (K_U - K_D)(1-T)\,{}^{D}\!/_{S_L} = .12 + (.12 - .05)(1-.25)\frac{100,000}{806,250 - 100000} = 12.7434$$

WACC = (.127434 *706250+.05*100000*.75)/806,250 = 11.6279%

11.6279%

Problem 3. (10 marks) A large printing company is considering purchasing a new printing press to replace the existing one that cost the company $1million five years ago. The new machine will cost the company $1.8 million, has an economic life of ten years, and an expected salvage value of $150,000. The old machine can be sold for of $200,000 today and could be sold for $10,000 in ten years. Both machines have a CCA rate of 30 percent. Assume that the company has many printing presses and that the asset class will continue after the printing press is disposed of. The company projects that sales will increase by $250,000 per year due to the new machine. Maintenance costs of the old machine were forecasted to be $30,000 per year for the next 10 years. Maintenance costs for the new machine are expected to be $20,000 per year for the life of the machine. The company's tax rate is 40 percent and the cost of capital is 12 percent. Conduct an NPV analysis of this replacement decision and make a recommendation.

Cash flows (new – old)

Year 0: net investment = $1.8 million - .2 million = $1.6 million

Year 1 to 10 (operating cash flows) = $250,000 – (20,000-30,000) = $260,000
after tax: $156,000

Year 10 (salvage) = $150,000 - $10,000 = $140,000

PV(operating cash flows) = $881,434.79

PV(CCA with salvage) =

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

$$= \frac{1,600,000*.3*.4}{.3+.12} * \frac{(1+0.5*.12)}{(1+.12)} - \frac{140,000*.3*.4}{.3+.12} * \frac{1}{(1+.12)^{10}}$$

$$= 457,142.8571*0.9464 - 40,000*.32197$$

$$= \$419,774.1318$$

PV of salvage = $45,076.25

NPV = $881,434.79 + 419,774.13 + 45,076.25 - 1,600,000 = -$253,714.83

NPV (round to nearest $): -$253,714.83

Recommendation: Do Not Replace machine

Problems: Answer in the space provided on this exam

Problem 4. (5 marks) You have just completed an analysis of a project and have found that the project has a payback period of 3 years and an NPV of $1,000,000. Your boss will only accept projects with payback periods of at most 2 years. Provide two reasons why your boss should not rely entirely on the payback period to choose projects. Provide a brief explanation of each reason – point form is recommended.

Reason 1: Payback period doesn't take into account the time value of money.
Time value of money takes into account both the timing of the cash flow and the opportunity
cost of the capital.
Reason 2: Payback period doesn't take into account any cash flows that occur after the payback period
- the payback period is an incomplete measure of the value the project can add to the firm

Problem 5. (5 marks) Your Father is considering investing in one or more options but doesn't fully understand the impact that different factors will have on the value of calls and puts. He has asked you to provide some guidance on what will happen to option prices as various factors change. Fill in the table below to help your Father out with his dilemma.

Note: In considering the impact on each option price caused by each factor individually, assume that each of the factors is INCREASED while the remaining factors are held constant. Answer by inserting a "+" sign in the cell if the value of the call (put) is expected to increase and a "–" sign if the value of the call (put) is expected to decrease. The correct assignment has been provided for the first factor (dividends).

Factor	Affect on call option value	Affect on put option value
Dividends	–	+
Asset Price	+	-
Strike Price	-	+
Time to Expiration	+	+
Volatility	+	+
Interest Rates	+	-