Very Important (READ THIS):

All students with seven digit ID numbers must add "2" in front of their ID number to make it eight digit. For example:

ID # 6770177 should be made 26770177

You should put the eight-digit ID (26770177 in the above example) on both the exam and the bubble sheet.

Examination Cover Sheet

Print Family Name: ➔	***Print Given Name:*** ➔	***ID Number:*** ➔	
COURSE *FINANCE*	***NUMBER*** *COMM 308*	***SECTIONS: CC, DD, H, I, J***	
EXAMINATION *Final Exam* ***VERSION BLUE***	***DATE*** *April 19th, 2017*	***TIME*** *3 hours* *14:00 to 17:00*	***# OF PAGES 16*** *Including this cover*
INSTRUCTOR: Circle your Professor Ian Rakita Jennifer Yang Lobna Bouslimi Gary Ng Frederick Davis		***DIVISION*** *John Molson School of Business* *Concordia University*	

INSTRUCTIONS: ***Please read these carefully***

1. *Please ensure you have 16 pages (including this cover page) in this exam.*
2. *For Part I of this exam (Multiple Choice Questions): All answers must be recorded IN PENCIL on the computer sheet. Only the computer sheet will be graded.*
3. *For Part II: 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*
4. *For Part II: All answers must be recorded IN INK within this exam.*

MATERIALS ALLOWED*:*

1. *You must submit a BLUE computer answer sheet.*
2. *You are allowed to bring one or more calculators (ENCS sticker not necessary)*
3. *You are allowed to bring one language dictionary (no finance/ mathematics/economics etc. dictionary)*

Part I: Multiple Choice Questions (35 Questions, 70 Points Total):

- This part consists of 35 Multiple Choice Questions. Each question is worth 2 points.

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

- Use a pencil to mark your answers on the Computer Sheet.

1. Using the following information, find the price of put option

Stock price (St) = $55, Interest rate (I) = 5.00% Strike price (X) = $53, Call Premium =$3, Maturity (T) = 3 Months

$0.47
$0.62
$3.47
$0.35

Answer: D

2. Jim Mayer has deposited $7,000 in a guaranteed investment account with a promised rate of 7% compounded annually. He plans to leave it there for 4 full years when he will make a down payment on a car after graduation. How much of a down payment will he be able to make?

A. $8,960.00
B. $1,960.00
C. $2,175.57
D. $9,175.57

Answer: D
Using the formula FV = PV (1+k) ^n. Hence FV (t=4) = 7000(1+7%) ^4= $ 9175.57. Using calculator: PV = -7000, I/Y= 7, N=4, PMT= 0, CMT FV = $9175.5

3. What is the effective annual rate if a bank charges you 7.64% compounded quarterly?

A. 7.79%
B. 7.86%
C. 7.95%
D. 7.98%
E. 8.01%

Answer B.
Using the formula Effective rate = (1+QR/m) ^m/f-1.
Hence, EAR= (1+7.64%/4) ^4 -1 = 7.86%

4. An investment today of $3300 is worth $10,000 in 8 years. At what rate has your investment been growing (annually) over the 8 years?

A. 14.00%
B. 14.86%
C. 13.86%
D. 7.98%
E. 8.01%

Answer B
Using the formula $10,000 = 3300(1 + r)^8$; $10,000/3300 = 3.0303 = (1 + r)^8$; $1 + r = 1.14864482$ or 14.86%; PV = -3300, FV = 10,000 N = 8 PMT = 0 I/YR = ? = 14.86%

5. Systematic risk is measured by:

A. The mean
B. Beta
C. The geometric average
D. The standard deviation

Answer: B

6. A portfolio is entirely invested into Buzz's Bauxite Boring Equity, which is expected to return 16%, and Zum's Inc. bonds, which are expected to return 8%. Sixty percent of the funds are invested in Buzz's and the rest in Zum's. What is the expected return on the portfolio?

A. 9.6%.
B. 12.8%.
C. 24.1%.
D. 6.4%.

Answer: B
Using the formula $R=ER(p) = W_1ER_1 + W_2ER_2$
$ER(p) = 60\%*16\% + 40\%*8\% = 0.096+ 0.032= 12.8\%$

7. You are comparing stock A to stock B. Given the following information, which one of these two stocks should you prefer and why?

State of Economy	Probability of State of Economy	Rate of Return if State Occurs: Stock A	Stock B
Boom	60%	9%	15%
Recession	40%	4%	-6%

A. Stock A; because it has an expected return of 7% and appears to be more risky.
B. Stock A; because it has a higher expected return and appears to be less risky than stock B.
C. Stock A; because it has a slightly lower expected return but appears to be significantly less risky than stock B.
D. Stock B; because it has a higher expected return and appears to be just slightly more risky than stock A.
E. Stock B; because it has a higher expected return and appears to be less risky than stock A.

Answer: B
ER(A) = 60%*9% + 40%*4% = 0.054 + 0.016 = 7%
ER(B) =60%*15% + 40%*-6% = 0.09 -0.024 = 6.6%
Var(A) = 60%(9%-7%)^2 + 40%(4%-7%)^2 = 0.00024 + 0.00036= 0.06%
Var(B) = 60%(15%-6.6%)^2 + 40%(-6%-6.6%)^2 = 0.00423360+ 0.00635040=1.0584%

8. Suppose the JumpStart Corporation's common stock has a beta of 0.8. If the risk-free rate is 4% and the expected market return is 9%, the expected return for JumpStart's common is:

A. 3.2%.
B. 4.0%.
C. 7.2%.
D. 8.0%.
E. 9.0%.

Answer D.
Using CAPM: ER = Rf + B(Rm-Rf) = 4% + 0.8(9%-4%) = 8%

9. The internal rate of return (IRR) is:

A. The discount rate that makes the NPV greater than zero for a given set of cash flows.
B. The discount rate that sets the FV of future CFs equal to the initial cash outlay.
C. The opportunity cost of the capital invested in the project.
D. The economic rate of return of a given project.

Answer: D

10. Which of the following statements is FALSE?

A. The NPV profile shows the NPV of a project for various IRRs.
B. Mutually exclusive projects are projects for which the acceptance of one means that other alternative projects will be rejected.
C. The crossover rate is a special discount rate at which the NPV profiles of two projects cross.
D. There may be more than one IRR for cash flow streams where the cash flows change signs more than once.

Answer: A

11. Consider a 12-year project that costs $48,000 today and will produce after-tax cash flows of $6,000 each year for the first four years, $7,000 each year for the next four years, and $8,000 each year for the last four years. If the cost of capital is 8 percent, what is the project's NPV?

A. –$30,092.41
B. $907.11
C. $3,229.86
D. $21,554.66

Answer: C

$$NPV = -48,000 + 6,000PVAF(8\%,4) + \frac{7,000PVAF(8\%,4)}{1.08^4} + \frac{8,000PVAF(8\%,4)}{1.08^8} = 3,229.86$$

= -48000 + 19872.89 +17041.70884 + 14315.60675 = 3229.86

12. A company is considering two mutually exclusive projects X and Y. Project X requires an initial investment of $100,000 and is expected to generate after-tax cash flows of $45,000 per year for three years and then $0 in year four. Project Y requires an initial investment of $150,000 and is expected to generate after-tax cash flows of $50,000 per year for four years. The appropriate discount rate is 10 percent. What is the crossover rate for projects X and Y?

A. 4.06%
B. 7.77%
C. 12.59%
D. 16.65%

Answer: B

Crossover rate (CR) = IRR of the incremental project (Y – X)
CFs of project (Y – X): –$50,000, $5,000, $5,000, $5,000, and $50,000

Using a financial calculator:
[CF][2nd][CLR WORK]

CF0=–50,000, C01=5,000, F01=3, C02=50,000, F02=1. IRR. CPT.
CR = 7.77%

13. A firm is considering a project that has cash flows indexed to the consumer price index which is a well-known measure of inflation. Given this fact, what discount rate should be chosen?

A. Nominal discount rate
B. Yield to maturity
C. Change in consumer price index
D. A rate that uses the consumer price index in its measure

Answer: D

14. A manufacturing company is considering purchasing a new machine to replace the existing one to improve production efficiency. The new machine will cost the company $200,000 and is expected to sell for $15,000 in ten years. The old machine has a market value of $50,000 today and could be sold for $5,000 in ten years. Both machines have a CCA rate of 30 percent. With the new machine, the company expects savings of $50,000 in operating expenses per year. The company's tax rate is 40 percent and the cost of capital is 15 percent. What is the present value of the incremental CCA tax savings generated by the replacement decision?

A. $36,402.57
B. $36,732.15
C. $48,866.33
D. $49,195.91

Answer: B

C_0 = $200,000 – $50,000 = $150,000; SV = $15,000 – $5,000 = $10,000

$$PV(CCATS) = \frac{\$150,000 \times .4 \times .3}{(.15+.3)} \times \frac{1.075}{1.15} - \frac{\$10,000 \times .4 \times .3}{(.15+.3)} \times \frac{1}{1.15^{10}} = \$36,732.15$$

15. Suppose the following projects are mutually exclusive. Using the Equivalent annual NPV approach, which project should be chosen if the appropriate discount rate is 10 percent?

Project	CF_0	NPV	Project Life
Mars	$100,000	$15,500	4
Saturn	$125,000	$17,250	6
Venus	$75,000	$8,250	2
Jupiter	$135,000	$20,000	10

A. Project Mars
B. Project Saturn
C. Project Venus
D. Project Jupiter

Answer: A

Project Mars's EANPV = $15,500 / PVAF(10%,4) = $4,889.80
Project Saturn's EANPV = $17,250 / PVAF(10%,6) = $3,960.73
Project Venus's EANPV = $8,250 / PVAF(10%,2) = $4,753.57
Project Jupiter's EANPV = $20,000 / PVAF(10%,10) = $3,254.91

Choose Project Mars because it has the highest EANPV

16. The greater the agency problem in a corporation, _____

A. The lower the discount rate investors will apply when discounting its expected future Cash flows.
B. The higher the discount rate investors will apply when discounting its expected Future cash flows.
C. The lower the coupon rate investors will demand from the corporation's bonds.
D. Both A and C
E. The difference in agency problem will not affect the discount rate.

ANSWER: B

17. Which of the following is the best example of a conflict of interest between management and shareholders?

A. Management borrows heavily to fund risky projects.
B. Management fights against a takeover bid despite the market consensus that it is the most reasonable bid.
C. Management moves production overseas to take advantage of low-cost labor.
D. Management voluntarily recalls defective products.
E. All of the above.

ANSWER: B

18. What proportion of a firm is equity financed if the weighted average cost of capital (WACC) is 14%, the before-tax cost of debt is 7%, the tax rate is 35% and the required return on equity is 18%?

A. 54.00%
B. 63.64%

C. 70.26%
D. 77.78%
E. None of the above.

ANSWER: C

WACC = (E/V) * k_e + (D/V) * k_d * (1 – T)
Let w = E/V then (1 – w) = D/V
0.14 = w * 0.18 + (1 – w) * 0.07 * (1 – 0.35)
0.14 = 0.18w + 0.0455 – 0.0455w
0.1345 w = 0.0945
w = 0.0945 / 0.1345 = 0.7026 or 70.26%

19. Which of the following statements is incorrect regarding the equity portion of the WACC?

A. Preferred equity is separate from common equity
B. Market values rather than book values should be used
C. Retained earnings is not included
D. Equity has a tax shield as well as debt

ANSWER: D

20. Fussy, Inc. is composed of two different divisions: food catering and shoe making. The company's overall weighted average cost of capital (WACC) is 10 percent, while the WACC for the food catering division is 7 percent and for the shoe making division is 12 percent. Assume zero taxes and all projects have the same life. Fussy has sufficient funds to invest in all the projects. Which of the following projects should the company accept?

Project	Industry	IRR (of project)
I	Food catering	6%
II	Shoe making	13%
III	Shoe making	11%
IV	Food catering	8%

A. II and III
B. I and III
C. II and IV
D. I, III and IV
E. Only II

ANSWER: C
Compare the IRR to the WACC

21. Which one of the following will increase the WACC of a firm?

A. An increase in the tax rate

B. An increase in the debt to equity ratio.
C. A decrease in the level of risk of a project.
D. An increase in the risk free rate of return.
E. Both A and D.

ANSWER: D

22. Toronto Skaters Company currently has 100,000 shares outstanding. It has just declared a 5 for 2 stock split. After the split, the number of shares outstanding will be

A. 40,000
B. 100,000
C. 250,000
D. 500,000

Answer: C
(5/2)*100,000=250,000

23. Which of the following is not a common motivator for a stock repurchase?

A. A desire to bring the firm back to its ideal capital structure.
B. A desire on the part of management to signal to the market that it thinks the firm's stock is undervalued.
C. A desire on the part of management to bump up the common share dividend yield.
D. A desire on the part of management to remove cash from the firm's balance sheet in order to avoid the temptation for other firms to acquire them.

Answer: C

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

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

Where I, II, III, and IV are, respectively:

I. Dividend payments of the underlying asset
II. Interest rates
III. Variance of the return on the underlying asset
IV. Time to expiration

Answer B

25. Layla owns 10,000 shares of stock that she wants to sell sometime within the next three months. Shares of this stock are currently selling for $43.50. The stock has been increasing in price but Layla is concerned the price might start to fall. She is not yet willing to sell his shares just in case the price rises some more. To guarantee that she can receive at least $42.50 a share when she does sell, Layla could purchase _____ with a strike price of _____. Assume that each option allows you to trade 100 units of the underlying asset.

A. 100 calls ; $42.50
B. 10,000 puts ; $43.50
C. 100 warrants; $43.50
D. 100 puts; $42.50
E. Either A, B, or D

Answer: D

26. You are planning to retire in 40 years. Once you retire, you would like to be able to make equal annual withdrawals from your savings account of $60,000 over the next 25 years. You will then die, exactly 65 years from now (how sad!). You are planning to secure your retirement funds by making equal annual deposits into your savings account at the end of each of the next 40 years. If your account earns a 12% annual return, how much should you deposit at the end of each of the following 40 years, so that you can meet your retirement needs? Both annuities are ordinary.

A. $613.47
B. $629.62
C. $657.35
D. $703.54

Solution A: Find PMT

The PV of the $60,000 withdrawals should equal the FV of the payments.

PMT × $FVA_{12\%, 40}$ = $60,000 × $PVA_{12\%, 25}$

$60,000 × $PVA_{12\%, 25}$ = -60,000 PMT; 12 I/Y; 25 N; CPT PV = $470,588.3467

-470,588.3467 FV; 12 I/Y; 40 N; CPT PMT = $613.4710

27. A typical successful movie brings in $3 million every day starting with its date of release. It usually stays on the big screen for 35 days on average. How much will it accumulate if the rate of return is 15% per year compounded daily (assume there are 365 days per year). Choose the *closest* alternative.

A. $95,687,690
B. $105,048,920
C. $105,736,890
D. $106,995,260

Solution C: Find FV

First find the Effective Daily Rate = 15%/365 = 0.04109589%

Calculator keystrokes are:

-3,000,000 PMT; 0.04109589 I/Y; 35 N; CPT FV = 105,736,888.7

28. How much would you pay for a share of stock today if you expect it will pay a dividend of $2.50 and will sell for $58 one year from now? Assume your required rate of return on this stock is 13 percent.

A. $60.70
B. $55.70
C. $53.54
D. $49.87

$P_0 = [(2.5+58)/ (1+13\%)] = 53.54$
Answer: C

29. Technical analysis, which is defined as the analysis of historical trends of prices, is an important field in finance. Which form of efficiency is this field based on?

A. Weak form inefficiency
B. Semi-strong form inefficiency
C. Strong form inefficiency
D. It has nothing to do with efficiency.

Answer: A

30. A bond with semi-annual coupons at a rate of 10 percent will mature in one year. If the bond's price is $1,008.00, what is the YTM?

A. 4.17%
B. 4.57%

C. 9.13%
D. 9.14%
E. 10.00%

Answer D
N = 2; PMT =50; FV = 1000; PV = -1008.00 CPT I/Y = 4.5724%
This a ½ year figure, so YTM = 4.5724% * 2 = 9.14%

31. A 9 year zero coupon bond has a par value of $1000 and will mature in six years. Calculate the current price of this bond if the market yield is 125 basis points higher than 6%.

A. $657.08
B. $652.27
C. $431.75
D. $704.96
E. Indeterminable (not enough information is provided to answer this question)

Answer: B
$652.27 [N=12 I/Y=3.625 PMT=0 FV=1000 CPT PV=-$652.27]

32. A 9-year bond that pays interest semi-annually has just been issued with its coupon rate set at the current market yield of 6 percent. How much would the price of the bond change (in percentage terms) if the market yield suddenly fell by 50 basis points?

A. 3.51%
B. 17.38%
C. 0.50%
D. 0.00%
E. 35.12%

Answer: A
With a coupon rate equal to the market yield, the price of the bond is $1,000. A fall in 50 bps result in a market yield of 5.5%. Using the financial calculator (assuming semi-annual coupon payments)
N = 18; I/Y = 2.75; PMT = 30; FV = 1000; CPT PV = - 1035.12
Increase in price of $35.12 or 3.51%

33. Security A has an expected return of 8% and a standard deviation of 6%. Security B has an expected return of 10% and a standard deviation of 9%. The correlation coefficient between A and B is 1 (the two stocks are perfectly positively correlated). If the standard deviation of the portfolio consisting of security A and B is 7.6%, what fraction of the total money has been invested in security B? (Hint: $(a+b)^2 = a^2 + b^2 + 2ab$)

A. 48.7%
B. 50.5%
C. 51.7%
D. 53.4%

Answer: D

$$\rho = 1$$
$$\sigma_p = W_A\sigma_A + W_B\sigma_B$$
$$0.076 = w \times 0.06 + (1 - w) \times 0.09$$
$$\rightarrow w = 46.6\% \rightarrow \ W_B = 1 - w = 53.4\%$$

34. A bond has a yield to maturity of 4% and a current yield of 6%. Which of the following statements is true?

A. The coupon rate must be 6%.
B. The bond is trading at a discount from face value.
C. The coupon rate must be less than the yield to maturity.
D. The bond is trading at a premium over face value.

Answer is D

35. The outstanding bonds of Bombardier provide a real return of 4.5%. The current inflation rate is 1.95%. What is the nominal rate of return on these bonds?

A. 2.44 %
B. 2.55%
C. 6.54%
D. 8.78%

Answer: is C: (1.045*1.0195)-1

Part II: Problems (30 Points Total)

- ***Answer on this document****, in the space provided. Use the back of the sheet if you need additional space. Label it clearly. Any work on the back of the sheet, which is not labeled clearly, will not be graded.*
- *Show all your work. Unsupported statements or numbers will not receive any grade.*

Q1: (8 points) Give the details of your calculations.

KLM Corporation is considering an expansion project that requires investment in capital assets of $545,000, costs of $15,000 to modify the assets before they can be put into operation, and additional raw materials inventory of $50,000 to support the project. In addition, KLM had spent $25,000 to study the viability of this project. The one-time after-tax opportunity costs associated with this project are $36,000. The project is expected to generate operating revenue of $600,000 per year, and the associated operating expenses are estimated at $275,000 per year. The relevant CCA rate is 30 percent. The assets are expected to sell for $42,000 when the project terminates in eight years. Assume that there are no tax implications when the project ends. The firm's cost of capital is 14 percent and marginal tax rate is 40 percent.

a) What is the initial after-tax cash flow**? (2 points)**
b) What is the present value of the CCA tax savings? **(2 points)**
c) What is the present value of the after-tax operating cash flows? **(2 points)**
d) What is the PV of ending after-tax cash flow? **(2 points)**

Show all relevant calculations. Be sure to write down the expressions that you will be evaluating. Intermediate calculations are not required but final calculator solutions for each question should be written clearly in the space provided.

Answer:

a) CF_0 = $545,000 + $36,000 + $50,000 + $15,000 = $646,000

b) C_0 = $545,000 + $15,000 = $560,000

$$PV(CCATS) = \frac{\$560,000 \times .4 \times .3}{(.14+.3)} \times \frac{1.07}{1.14} - \frac{\$42,000 \times .4 \times .3}{(.14+.3)} \times \frac{1}{1.14^8} = \$139,333.79$$

c) *PV(CFAT)* = $(600,000 – 275,000)*(1 – 40%)*PVAF(14%,8) = $904,578.46

d) $$PV(ECF) = \frac{\$42,000 + \$50,000}{1.14^8} = \$32,251.43$$

Q2: (9 points) Give the details of your calculations.

A stock has a beta of 1.13 and an expected return of 12.1 percent. A risk free asset currently earns 5%

a) What is the expected return on a portfolio that is equally invested in the asset and risk free asset? **(2points)**

b) If a portfolio of the two assets has a beta of 0.50, what are the portfolio weights? **(2points)**
c) If a portfolio of the two assets has an expected return of 10%, what is its Beta? **(2points)**
d) If a portfolio of the two assets has a beta of 2.26, what are the portfolio weights, how do you interpret the weights for the two assets in this case? **(3points)**

Solution

We have a special case where the portfolio is equally weighted, so we can sum the returns of each asset and divide by the number of assets. The expected return of the portfolio is:

a. Expected return of the portfolio = (0.121 + 0.05) / 2 = 0.0855, or 8.55%

b. We need to find the portfolio weights that result in a portfolio with a beta of 0.50. We know that the beta of the risk-free asset is zero. We assume the weight of the asset with the beta of 1.13 as X_S. Since the portfolio weights must sum to one, or 100 percent, the weight of the risk-free asset is one minus the weight of the stock–X_S, So:

$\beta_p = 0.50 = X_S \times (1.13) + (1 - X_S) \times (0)$
$0.50 = 1.13X_S + 0 - 0X_S$
$X_S = 0.50/1.13$
$X_S = 0.4425$

And, the weight of the risk-free asset is:

$X_{Rf} = 1 - 0.4425 = .5575$

c. We need to find the portfolio weights that result in a portfolio with an expected return of 10 percent. We assume the weight of the asset with the expected return of 1.13 as X_S. Since the portfolio weights must sum to one, or 100 percent, the weight of the risk-free asset is one minus the weight of the assets, X_S. So:

Expected return of the portfolio = $0.10 = 0.121X_S + 0.05 \times (1 - X_S)$
$0.10 = 0.121X_S + 0.05 - 0.05X_S$
$X_S = 0.7042$

So, the beta of the portfolio will be:

$\beta_p = 0.7042(1.13) + (1 - 0.7042) \times (0) = 0.796$

d. Solving for the beta of the portfolio as we did in part *b*, we find:

$\beta_p = 2.26 = X_S \times (1.13) + (1 - X_S) \times (0)$

$X_S = 2.26 / 1.13 = 2$

$X_{Rf} = 1 - 2 = -1$

The portfolio is invested 200% in the stock and −100% in the risk-free asset. The −100% in the risk-free asset represents borrowing at the risk-free rate to buy more of the stock.

Q3: (5 points) Give the details of your calculations.

Seven years ago, Embraer issued a semi-annual coupon bond with 12 years to maturity. The bond was originally issued at par with a $1000 face value. The coupon rate on the bond is 6% and the yield to maturity is 5%.

a) What was the effective annual rate (EAR) paid by this bond when it was issued? **(1 points)**
b) Calculate the 7-year capital gain or loss in percentage terms for an investor who bought the bond when it was issued and sells it today. Use formulas to calculate rather than calculator button entries**. (3 points)**
c) Explain in words the difference in the interest rate risk of the above bond, to a zero coupon bond that has the same maturity date, the same date of issue,, and the same yield to maturity when first issued. (You will not get full credit if you calculate the answer but cannot provide an intuitive argument.) **(1 point)**

Solution:

Seven years ago Embraer issued a semi-annual coupon bond with 12 years to maturity. The bond was originally issued at par with a $1000 face value. The coupon rate on the bond is 6% and the yield to maturity is 5%.
a) What was the effective annual rate (EAR) paid by this bond when it was issued?

$$EAR = (1 + 0.06/2)^2 - 1 = 6.09\%$$

b) Calculate the 7-year capital gain or loss in percentage terms for an investor who bought the bond when it was issued and sells it today.

There are 5 years left on the bond. t=0 was 7 years go. Coupon is $30 every 6 months.

7 years ago the price was $1000.

Today with 5 years left: $P7 = \$30/.025 \times [1 - 1/1.025^{10}] + 1000/1.025^{10} = \$1043.76$

Capital gain yield = [1043.76 - 1000]/1000 = 4.38% capital gain.

c) The zero coupon bond will have more price movement, and therefore more interest rate risk than the coupon bearing bond. If interest rates rise the YTM on the coupon bond allows for a higher reinvestment income that more quickly recovers the initial investment. The zero-coupon

bond has no cash flow until maturity. Therefore the price of the zero coupon bond will fall in price by a greater % than the coupon bearing bond when interest rates rise.

Q4: (8 points) Give the details of your calculations.

Suplex Entertainment has 10 million common shares outstanding, 250,000 shares of 6% preferred stock, and 100,000 semi-annual bonds at 7.5% (with par value of $1000 each). Common stock sells at $34/share (beta 1.25), preferred stock at $91/share, and the bonds at 93% of par with 15 years to maturity. The market risk premium is 8.5%, T-Bills are yielding 5%, and the corporate tax rate is 35%. What is Suplex Entertainment's WACC?

Answer: The market value of each type of financing is:
MV_D = 100,000 * 0.93 * $1,000 = $93,000,000 (0.5 points)
MV_E = 10,000,000 * $34 = $340,000,000 (0.5 points)
MV_P = 250,000 * $91 = $22,750,000 (0.5 points)
So, the total value is:
V = $93,000,000 + 340,000,000 + 22,750,000 = $455,750,000
And the capital structure weights are:
D/V = $93,000,000 / $455,750,000 = 0.20406 (0.5 points)

P/V = $22,750,000 / $455,750,000 = 0.04992 (0.5 points)

E/V = $340,000,000 / $455,750,000 = 0.74602 (0.5 points)

Cost of Equity: R_E = 0.05 + 1.25 * 0.085 = 0.15625 or 15.625% (1 point)
Cost of Debt: P_0 = $930 = $37.5($PVIFA_{R\%,30}$) + $1,000($PVIF_{R\%,30}$)

R = 4.163% and EAR = (1.04163)^2 - 1 = 8.499% (1 point)

After-tax Cost of Debt: R_D = (1 – 0.35) * 0.08499 = 0.05524 or 5.524% (0.5 points)
Cost of Preferred Stock: R_P = $6/$91 = 0.06593 or 6.593% (0.5 points)

So, WACC is: = (0.05524 * 0.20406) + (0.15625 * 0.74602) + (0.06593 * 0.04992)
= 0.1311 or 13.11% (2 points)