

**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**

<b>Print Family Name:</b> ➔	<b>Print Given Name:</b> ➔	<b>ID Number:</b> ➔	
<b>COURSE</b> FINANCE	<b>NUMBER</b> COMM 308	<b>SECTIONS:</b>	
<b>EXAMINATION</b> Midterm I <b>VERSION BLUE</b>	<b>DATE</b> October 16, 2016	<b>TIME</b> 2 hours 9:30: to 11:30	<b>#</b>
<b>INSTRUCTOR: please circle your instructor</b> Ian Rakita Azadeh Babaghaderi Jennifer Yang Moein Karami Wajeehel ali June Riley Raad Jassim		<b>DIVISION</b> John Molson School of Business Concordia University	

**INSTRUCTIONS: Please read these carefully**

1. Please ensure you have # pages (including this cover page) in this exam.
2. For this exam (Multiple Choice Questions): All answers must be recorded IN PENCIL on the computer sheet. Only the computer sheet will be graded.

**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)

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

- This part consists of 25 Multiple Choice Questions. Each question is worth 1 points.
- **Only answers on the computer answer sheet will be graded.**
- **Use a pencil to mark your answers on the Computer Sheet.**

1. A Canadian firm bought a new sewing machine for \$100,000 which is in asset class 43 with a capital cost allowance (CCA) rate of 30 percent and useful life of five years. Calculate the amount of CCA associated with this asset in the fourth year.
- A. \$12,495  
B. \$10,290  
C. \$30,400  
D. \$41,650

**Answer: A**

$$UCC_{beg,year4} = 100,000 \left(1 - \frac{0.3}{2}\right) (1 - 0.3)^2 = 41,650$$
$$CCA_{year4} = CCA_{rate} \times UCC_{beg,year4} = 0.3 \times 41,650 = 12,495$$

2. Which of the following is an example of a direct agency cost?
- A. A company always buys the latest computer equipment for its employees  
B. Senior management receives stock options enabling them to buy company stock at an exercise price well above the current stock price  
C. Managers can use the company float plane to fly to their cottages on weekends  
D. Sales reps are provided with company cars to use when visiting clients

**Answer: C**

Please note that choice “b” is an indirect agency cost

3. Which of the following is the **most** correct? \_\_\_\_\_ know their exposure is limited to the amount of capital they invest in the company.
- A. Shareholders  
B. Sole proprietors  
C. General and limited partners  
D. Limited partners and shareholders

**Answer: D**

4. Assume that all interest rates in the economy decline from 10% to 9%. Which of the following bonds will have the largest percentage increase in price?

- A. A 10-year bond with a 10% coupon.
- B. A 10-year zero coupon bond.
- C. An 8-year bond with a 9% coupon.
- D. A 1-year bond with a 15% coupon.

Answer: **b**

Statement (b) is correct, because the longer-term, lowest coupon bond will have the greatest price effect due to interest rates.

5. Dana Inc. paid \$4 million in dividends this year. Earnings are expected to grow by 15% each year for the next 10 years and 5% thereafter. Shareholders require a return of 10%. If there are 25 million shares outstanding, what is the estimated price per share?
- A. \$7.30
  - B. \$8.91
  - C. \$9.13
  - D. \$9.78

Answer: **a**

Solution:

The value per share is:

$$V_{\text{equity}} = \frac{4(1.15)}{(0.10 - 0.15)} \left[ 1 - \frac{1.15^{10}}{1.10^{10}} \right] + \frac{4(1.15)^{10}(1.05)}{(.10 - .05)(1.10)^{10}}$$

$$V_{\text{equity}} = \$51,495,863 + \$131,017,961 = 182,513,824$$

$$\text{Price per share} = \$182,513,824 \div 25,000,000$$

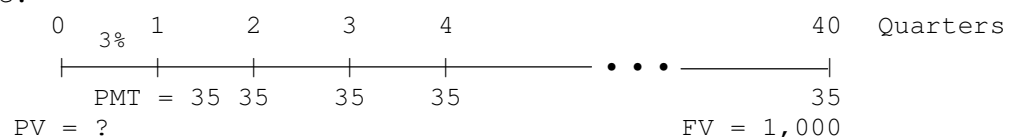
$$\text{Price} = \$7.30$$

6. A \$1,000 par value bond pays interest of \$35 each quarter and will mature in 10 years. If your nominal annual required rate of return is 12 percent with quarterly compounding, how much should you be willing to pay for this bond?
- A. \$ 941.36
  - B. \$1,051.25
  - C. \$1,115.57
  - D. \$1,391.00

Answer: **c**

Solution:

Time Line:



$$B_0 = C \left[ \frac{1 - 1/(1+k)^n}{k} \right] + FV * 1/(1+k)^n$$

$$B_0 = 35 \left[ \frac{1 - 1/(1+0.03)^{40}}{0.03} \right] + 1,000 * 1/(1+0.03)^{40} = \$1,115.57$$

Financial calculator solution:

Inputs: N = 40; I = 3; PMT = 35; FV = 1,000.

Output: PV = -\$1,115.57; V<sub>B</sub> = \$1,115.57.

7. The Delta Company has decided to undertake a large project. Consequently, there is a need for additional funds. The financial manager plans to issue preferred stock with a perpetual annual dividend of \$5 per share and a par value of \$30. If the required return on this stock is currently 20 percent, what should be the stock's market value?

- A. \$150
- B. \$100
- C. \$ 50
- D. \$ 25

Answer: d

Solution:

$$P_{ps} = D_p/k_p = \$5/0.20 = \$25.$$

8. A stock with a required rate of return of 10 percent sells for \$30 per share. The stock's dividend is expected to grow at a constant rate of 7 percent per year. What is the expected year-end dividend, D<sub>1</sub>, on the stock?

- A. \$0.87
- B. \$0.95
- C. \$1.02
- D. \$0.90

Answer: d

Solution:

We know that  $P_0 = D_1/(k_c - g)$  and we have all the information except D<sub>1</sub>, so we input the data into this equation.

$$\$30 = D_1/(0.10 - 0.07)$$

$$\$30 = 33.33D_1$$

$$D_1 = \$0.90.$$

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9. A firm has a ROE (Return on Equity) of 10 percent (EAR). If the dividends on the stocks of the firm are growing at a constant rate of 7 percent per year, calculate the firm's dividend payout ratio.

- A. 70%
- B. 45%
- C. 35%
- D. 30%

Answer: D

$$g = b \times ROE$$
$$b = 70\% \rightarrow \text{Dividend Payout Ratio} = 30\%$$

10. Professor Scholes just borrowed \$125,000 from a bank to buy his favourite car. The bank has agreed to loan him the money at a Quoted Rate of 6% compounded monthly for 60 months. Based on this information, how much principal will he repay in the 51<sup>st</sup> month of the loan? Please round your final answer to the nearest dollar?

- A. \$1,171
- B. \$2,006
- C. \$2,021
- D. \$2,299

D.

First find the payment.

$$PV_0 = \$125,000 = PMT * PVA_{(6/12)\%,60}$$

$$\text{Solving: } PMT = \$2,416.60$$

$$\text{Balance after 50}^{\text{th}} \text{ payment} = \text{PV of Remaining ten payments} =$$
$$\$2,416.60 * PVA_{(6/12)\%,10} = \$23,514.52$$

$$\text{Interest on the 51}^{\text{st}} \text{ payment} = \$23,514.52 \times (6/12)\% = \$117.57$$

$$\text{Principal repaid} = \$2,416.60 - \$117.57 = \$2,299.03$$

11. Your bank account pays an 8 percent quoted rate of interest. The interest is compounded quarterly. Which of the following statements is most correct?

- A. The interest rate per quarter is 2 percent and the EAR is greater than 8 percent.
- B. The interest rate per quarter is 8 percent and the EAR is greater than 8 percent.
- C. The interest rate per quarter is 8 percent and the EAR is 8 percent.
- D. The interest rate per quarter is 2 percent and the EAR is 4 percent.

A.

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12. Which of the following statements is correct?

- A. An investment that compounds interest semi-annually, and has a quoted rate of 10 percent, will have an effective annual rate of less than 10 percent.
- B. The proportion of the payment of an installment (amortized) loan that goes towards the repayment of principal increases over time.
- C. The present value of a 3-year \$100 annuity due is less than the present value of a 3-year ordinary annuity.
- D. Statements A and B are correct.

**B.**

13. Six years from now you will begin to receive cash flows of \$200 per year. These cash flows will continue forever. If the appropriate discount rate is 5%, what is the present value of these cash flows? Choose the closest value.

- A. \$4,000
- B. \$3,134
- C. \$2,157
- D. \$1,567

**B.**

$$PV_5 = \$200/0.05 = \$4,000.$$

$$PV_0 = \$4,000/(1+0.05)^5 = \$3,3134.10$$

14. You have just won a big jackpot at the Montreal casino and have been offered two options:

Option I: Receive \$100,000 at the end of each of the next 30 years

Option II: Receive a lump sum today ( $t = 0$ )

How much should the lump sum be so that you would be indifferent (not care either way) between the two options? The interest rate is 5% compounded semi-annually. Please round your answer to the nearest dollar.

- A. \$1,526,353
- B. \$1,537,245
- C. \$1,979,277
- D. \$2,958,555

**A.**

Lump sum = PV of the annual \$100,000 deposits earning the EAR

$$\text{EAR} = \left(1 + \frac{0.05}{2}\right)^2 - 1 = 5.0625\%$$

$$\text{Lump sum} = \$100,000 * PVA_{5.0625\%,30} = \$1,526,353.41$$

15. The semi-annual 6 percent coupon paying bonds of “XYZ” company, have a quoted price (i.e., clean price) of \$910. If the last coupon payment occurred on June 30<sup>th</sup>, 2016; the cash price of the bond on July 30<sup>th</sup>, 2016 is closest to which one of the following choices? Assume that face value of the bond is \$1000.

Semi-annual interest = 30 → annual interest=60

*cash price = quoted price + accrued interest*

A. \$960

$$\text{cash price} = 910 + 60 * \frac{30}{365} \sim \$915$$

B. \$955

or you can say:  $\text{cash price} = 910 + 60 * \frac{1}{12} = \$915$

C. \$920

D. \$915

16. Suppose Bombardier zero-coupon bonds have a face value of \$1000 and mature in 16 years. They currently (today) sell for \$343.04. By what percentage will the market price rise if the market's required return (quoted rate with semi-annual compounding) falls by half?

A. 63.2% Current YTM =  $3.4 * 2 = 6.8\%$  (using calculator 32N -343.04PV 1000FV)

B. 70.0%

If interest rates fall from 6.8% to 3.4% from:

C. 36.83%

32 N 1.7 I/Y 1000 FV 0 PMT gives PV = 583.08

D. 170.0%

price change percentage =  $(583.08 - 343.04) / 343.04 = 70\%$

17. What is the price of a semi-annual corporate bond that has a 6% coupon rate (compounding is semi-annually), face value of \$1000, 12 years to maturity and a discount rate of 7%.

A. \$1083.84

B. \$1677.42

$n=24, FV=1000, 3.5=I/Y, 30 PMT$

C. \$919.71

D. \$922.57

18. ABC Company has a bond outstanding that has a 5% coupon rate and a market price of \$785. If the bond matures in 8 years and interest is paid semi-annually, what is the YTM?

A. 5.0%

B. 6.0%

25 PMT, -469.78 PV 1000 FV 16 N gives  $4.4\% * 2 = 8.8\%$  YTM

C. 7.3%

D. 8.8%

19. Jake wants to buy a zero coupon bond that will be worth \$1000 nine years from today. How much should he pay today to buy this bond if he wants to earn 6.5% (quoted rate with semi-annual compounding) on his investment?

- A. \$551.89                       $\frac{1000}{1.0325^{18}}$   
 B. \$562.32  
 C. \$1007.02  
 D. \$750

20. You invested \$2,000 at 5 percent compounded annually. Determine how much interest was earned in the fifth year. (Round your answer to two decimals.)

- A. \$100.00  
 B. \$121.55  
 C. \$500.00  
 D. \$552.56

Answer: b

$$\$2,000 \times (1.05^5 - 1.05^4) = \$121.55$$

In the fifth year means from beginning of year 5 until end of year 5

21. Your bank account pays a quoted interest rate of 5 percent, but interest is compounded daily (on a 365-day basis). Your plan is to deposit \$600 into the account today. You also plan to deposit \$800 into the account at the end of each of the next three years. How much will have in the account at the end of three years, right after making your final deposit? Round your answer to the nearest dollar.

- A. \$3,222  
 B. \$3,525  
 C. \$3,716  
 D. \$3,824

A.

$$\text{With daily compounding, EAR} = (1 + 0.05/365)^{365} - 1 = 5.1267496\%$$

The \$600 deposit grows for three years and the three \$800 deposits form an annuity.

$$FV_4 = 600 \times FV_{5.1267496\%, 3} + 800 \times FVA_{5.1267496\%, 3} = \$3,222.24$$

22. You plan to borrow \$15,000 to purchase a car. The interest rate quoted to you is 6.25% per year, compounded monthly, and the term of the loan is three years with monthly payments. How many months will it take you to reduce your loan balance to \$9,500?

- A. 22.0 months  
 B. 15.6 months  
 C. 14.0 months

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D. 11.9 months

C.

$$\$15,000 = \text{PMT} \times \text{PVA}_{6.25\%/12, 120}$$

$$\text{Solve to find PMT} = \$458.03$$

Based on this PMT, find the amount of time it will take to pay off a balance of \$9,500.

$$\$9,500 = \$458.03 \times \text{PVA}_{6.25\%/12, n}$$

Solve (using calculator) to find  $n = 22$ . This means that a balance of \$9,500 will be paid off in 22 months.

Since the loan is for a 36 month term, it will take  $36 - 22 = 14$  months to reach this point.

23. You have just taken out a 10-year, \$15,000 loan. This loan is to be repaid in 120 equal end-of-month installments. If each of the monthly installments is \$200, what is the effective annual interest rate on this loan?

- A. 4.812%
- B. 9.609%
- C. 10.213%
- D. 10.705%

D.

$$\$15,000 = 200\text{PVA}_{k\%, 120}$$

$$\text{Solve to find } k = 0.8510876\%$$

$$\text{EAR} = (1.008510876)^{12} - 1 = 10.70495\%$$

24. Company XYZ just paid a dividend of \$2 on its shares. The dividend is expected to grow by 5 percent each year. What is the capital gain that you achieve on your investment if you buy the stock of company today and sell it one year from now? Assume that the required rate of return is 12% (EAR).

- A. 12%
- B. 10.4%
- C. 5%
- D. 3.8%

Answer: C

capital gain is  $g$ !

$$\frac{P_1 - P_0}{P_0} = g = 5\%$$

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25. If investors require a 6% nominal return and the expected inflation rate is 2.5%, what is the expected real return?

- A. 8.65%       $(1 + \text{real rate}) = (1 + \text{RF}) / (1 + \text{expected inflation})$   
B. 3.5%  
C. 3.4%      1.06  
D. 3.3%      1.025





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