Print Last Name: ➔	**Print First Name:** ➔	**ID Number:** ➔	
COURSE FINANCE	**NUMBER** COMM 308/1	**SECTIONS:** AA	
EXAMINATION Mid Term Exam Version **Blue**	**DATE** June 2, 2014	**TIME** 2 hours	**# OF PAGES 14** including cover

READ THESE INSTRUCTIONS CAREFULLY

- This exam is composed of 23 multiple-choice questions and 3 multi-part problems. Some of the sub-questions rely on information calculated in other parts of the question. Carry through errors will not be penalized

- For Multiple Choice Questions,
All answers must be recorded IN PENCIL on the computer sheet.

- For Problems:
All answers must be recorded within this exam.
Show all work. Credit will not be given for answers without supporting information.
Use the back of the pages for scratch.

- **Cell phones must be turned off, programmable calculators, PDAs, Lap Tops are not allowed.**

- **Please ensure you have 14 pages (including cover) in this exam.**

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

SCORES (FOR INSTRUCTORS USE ONLY)

Multiple Choice Questions (Max: 69 Points)	**Long Answer Questions**			**Total (100 Points)**
	Question 1 (Max: 10 Points)	Question 2 (Max: 10 Points)	Question 3 (Max: 11 Points)	

Part 1 Multiple Choice: Please write the letter of the correct answer in the space provided **AND** circle your choice in the list of possible answers. Students choosing more than one correct answer will get no credit for that question! **(3 points each)**

1) Which of the following best describes the annual percentage rate?

A) the discount rate when it is divided by the number of times it is compounded in a year

B) the total amount of interest that will be earned in one year

C) the quoted interest rate which considered with the compounding intervals gives the effective interest rate

D) the effective annual rate after compounding is taken into account

E) the discount rate when compounded more than once a year or less than once a year

2) Which of the following bonds is trading at a premium?

A) a 20-year bond with a $5000 face value whose yield to maturity is 10.0% and coupon rate is 6.5%

B) a 15-year bond with a $10,000 face value whose yield to maturity is 8.0% and coupon rate is 7.8% (coupon paid semi-annually)

C) a five-year bond with a $2000 face value whose yield to maturity is 7.0% and coupon rate is 7.2% (coupon paid semi-annually)

D) a two-year bond with a $50,000 face value whose yield to maturity is 5.2% and coupon rate is 5.2% (coupon paid monthly)

E) a ten-year bond with a $4000 face value whose yield to maturity is 6.0% and coupon rate is 5.9% (coupon paid semi-annually)

3) What is the process of double taxation for the stockholders in a corporation?

A) Their shares are taxed when they are both bought and sold.

B) The corporation is taxed on the profits it makes, and the owners are taxed when this profit is distributed to them.

C) The corporation is taxed on any profits it makes, and owners are taxed when they sell their shares.

D) The corporation must pay taxes on any profits it makes, and the capital raised by the sale of shares is also subject to taxation.

E) The owners of a corporation are taxed when they receive dividend payments and when they make a profit from the sale of shares.

4) Which of the following statements is most correct?

A) the discount rate for an n-year time interval, where n may be more than one year or less than or equal to one year (a fraction)

B) the interest rate that would earn the same interest with annual compounding

C) the cash flows from an investment over a one-year period divided by the number of times that interest is compounded during the year

D) the ratio of the number of the annual percentage rate to the number of compounding periods per year

E) the amount of simple interest earned in one year without considering the effects of compounding.

5) Which of the following bonds will be most sensitive to a change in interest rates?

A) a 30-year bond with a $1000 face value whose yield to maturity is 5.5% and coupon rate is 6.4% (Coupon paid annually)

B) a 15-year bond with a $1000 face value whose yield to maturity is 5.5% and coupon rate is 6.4% (Coupon paid annually)

C) a 15-year bond with a $1000 face value whose yield to maturity is 6.4% and coupon rate is 6.4% (Coupon paid annually)

D) a 30-year bond with a $1000 face value whose yield to maturity is 6.5% and coupon rate is 5.8% APR paid semi-annually

E) a 30-year bond with a $1000 face value whose yield to maturity is 5.9% and coupon rate is 7.4% APR paid semi-annually

6) In which of the following ways is a limited liability partnership like a corporation?

A) Both can choose to be considered a partnership for tax purposes.

B) All of its owners' liability is restricted to their investment in the firm.

C) Both types of firm were created and developed first in Canada.

D) It is directly managed by the owners of the firm.

E) Owners have unlimited personal liability.

7) Joe is a general partner in a limited partnership firm, while Jane is a limited partner in that same firm. Which of the following statements regarding their respective relationships to the firm is correct?

A) Withdrawal of Jane from the partnership will dissolve that partnership.

B) Joe has no management authority within the partnership.

C) Jane's liability for the firm's debts consists solely of her investment in the firm.

D) Jane's liability consists of all the firm's outstanding debts.

E) Jane is legally involved in the managerial decision making of the firm.

8) Which of the following best shows the timeline for cash flows from a five-year bond with a face value of $2,000, a coupon rate of 4.2%, and semi-annual payments?

A)
```
0       1       2       3               9       10
+-------+-------+-------+--- . . . -------+-------+
        $21     $21     $21             $21     $2021
```

B)
```
0       1       2       3       4       5
+-------+-------+-------+-------+-------+
        $84     $84     $84     $84     $2,084
```

C)
```
0       1       2       3               9       10
+-------+-------+-------+--- . . . -------+-------+
        $17.50  $17.50  $17.50          $17.50  $2,017.50
```

D)
```
0       1       2       3               9       10
+-------+-------+-------+--- . . . -------+-------+
        $42     $42     $42             $42     $2,042
```

E)
```
0       1       2       3               9       10
+-------+-------+-------+--- . . . -------+-------+
        $42     $42     $42             $42     $42
```

9) Which of the following is typically the major factor in limiting the growth of a sole proprietorship?

A) It is extremely difficult to transfer control of such a firm to a new owner if the present owner dies or wishes to sell the firm.

B) The amount of money that can be raised by the firm is limited by the fact that the single owner must make good on all debts.

C) Investors have a great deal of control over the day-to-day running of the firm, leading to confusion when conflicts in direction arise.

D) The organization of such firms tends to become extremely complicated over time.

E) The owner has limited liability in the business.

10) How are investors in zero-coupon bonds compensated for making such an investment?

A) Bond prices always increase over time.

B) Such bonds are purchased at a discount to their face value.

C) The face value of these bonds is less than the value of the bond when the bond matures.

D) Such bonds are purchased at their face value and sold at a premium at a later date.

E) The bond makes regular interest payments.

11) A stock is bought for $22.00 and sold for $26.00 one year later, immediately after it has paid a dividend of $1.50. What is the capital gain rate for this transaction?

A) 18.18%

B) 0.27%

C) 25.00%

D) 20.00%

E) 15.00%

$$CG = \frac{26 - 22}{22} = 18.18\%$$

12) OwenInc has a current stock price of $14.50 and is expected to pay an $0.85 dividend in one year. If OwenInc's required rate of return is 12%, what price would OwenInc's stock be expected to sell for immediately after it pays the dividend?

A) $12.18

B) $15.39

C) $15.29

D) $16.24

E) $13.65

$$return = \frac{P_1 + D_1 - P_0}{P_0} = 0.12$$

$$P_1 = 0.12 \times 14.50 + 14.50 - 0.85 = \$15.39$$

13) A bond indenture indicates

A) the yield to maturity of the bond.

B) the price of the bond

C) the amounts and dates of all payments to be made.

D) the bond premium

E) the individual to whom payments will be made.

14) A bank offers a loan that will requires you to pay 6% interest compounded monthly. Which of the following is closest to the EAR charged by the bank?

A) 6.00%
B) 6.17%
C) 6.48%
D) 72.00%
E) 5.84%

$$EAR = \left(1 + \frac{0.06}{12}\right)^{12} - 1 = 6.17\%$$

15) Ursula wants to buy an $18,999 used car. She has savings of $2,000 plus an $800 trade-in. She wants her monthly payments to be about $272. Which of the following loans offers monthly payments closest to $272?

A) 6.5% APR (compounded monthly) for 84 months
B) 6.5% APR (compounded monthly) for 36 months
C) 6.5% APR (compounded monthly) for 48 months
D) 6.5% APR (compounded monthly) or 60 months
E) 6.5% APR (compounded monthly) or 72 months

$$k = \frac{0.065}{12} = 0.005417$$
$$P = 19{,}999 - 2800 = 16199$$
$$= \frac{272}{k} \times \left[1 - \frac{1}{(1+k)^n}\right]$$
$$\left[1 - \frac{16199 \times 0.005417}{272}\right] = \frac{1}{(1+0.005417)^n}$$
$$n = 72.09 \approx 72 \text{ months}$$

16) Which of the following would be most likely to lower the interest rate that a bank offers a borrower?

A) The expected inflation rate is expected to be high.
B) The borrower is judged to have a low degree of risk.
C) The number of borrowers seeking funds is high.
D) The number of savers depositing funds at the bank is low.
E) The borrowing period will be for a long period of time.

17) Eight percent APR compounded semi-annually is equivalent to what percentage APR compounded monthly?

A) 4.63%
B) 7.87%
C) 8.00%
D) 8.16%
E) 24.00%

$$8\% APR\ Comp\ Semi-anually = 4\%\ effective\ semi-annual$$
$$EMR = (1 + ESR)^{\frac{1}{6}} - 1 = 1.04^{\left(\frac{1}{6}\right)} - 1 = 0.0065582$$
$$APR\ Comp\ Monthly = 12 \times 0.0065582 = 7.87\%$$

18) A $1000 face value bond with a coupon rate of 0% has five years to maturity and a yield to maturity of 7.5% (EAR). If interest rates rise and the yield to maturity increases to 7.8% (EAR), what will happen to the price of the bond?

A) fall by $11.59
B) rise by $10.06
C) fall by $9.64
D) rise by $12.16
E) The price of the bond will not change.

$$P_0 = \frac{1000}{1.075^5} = \$696.56$$

$$P_1 = \frac{1000}{1.078^5} = \$686.92$$

$$\Delta = \$696.56 - \$686.92 = \$9.64$$

19) A homeowner has a $200,000 home with a 20-year mortgage, paid monthly at a quoted APR (compounded semi-annually) of 7.25%. After five years he receives $50,000 as an inheritance. If he pays this $50,000 toward his mortgage and continues paying his regular monthly payments, by approximately how many years will it reduce the amount of time it takes him to pay off his mortgage? Pick the closest answer.

A) 6 years
B) 2 years
C) 5 years
D) 4 years
E) 3 years

$$k = 0.0059524, \quad 200{,}000 = \frac{PMT}{0.0059524} \times \left(1 - \frac{1}{(1+0.0059524)^{240}}\right) \Longrightarrow PMT = \$1{,}567.80$$

$$OB_5 = \frac{\$1{,}567.80}{0.0059524} \times \left(1 - \frac{1}{(1+0.0059524)^{180}}\right) = \$172{,}886.86$$

$$New\ Balance = \$172{,}886.86 - 50{,}000 = 122{,}886.86 = \frac{\$1{,}567.80}{0.0059524} \times \left(1 - \frac{1}{(1+0.0059524)^{n}}\right)$$

$$n = 106 \Longrightarrow reduced\ by: 180 - 106 = 74 \approx 6\,years$$

20) A bank pays interest quarterly with an EAR of 8%. What is the quarterly interest rate?

A) 1.46%
B) 2.06%
C) 2.00%
D) 1.94%
E) 1.80%

$$EQR = (1.08)^{\frac{1}{4}} - 1 = 1.94\%$$

21) Howard is saving for a long holiday. He deposits a fixed amount every month in a bank account with an EAR of 7.5%. If this account pays interest every month then how much should he save from each monthly paycheck in order to have $10,000 in the account in two years' time?

A) $166
B) $388
C) $417
D) $4818
E) $161

$$EMR = 1.075^{\frac{1}{12}} - 1 = 0.00604492, \quad n = 2 \times 12 = 24$$

$$10{,}000 = \frac{PMT}{k}\left((1+k)^n - 1\right) \Longrightarrow PMT = \frac{10{,}000 \times k}{(1+k)^n - 1} = \$388.43$$

22) A bank offers an account with an APR of 6% and an EAR of 6.09%. How does the bank compound interest for this account?

A) weekly compounding

B) monthly compounding

C) semi-annual compounding

D) annual compounding

E) daily compounding

23) Your firm needs to invest in a new delivery truck. The life expectancy of the delivery truck is five years. You can purchase a new delivery truck for an upfront cost of $200,000, or you can lease a truck from the manufacturer for five years for a monthly lease payment of $4000 (paid at the end of each month). Your firm can borrow at 6% APR with quarterly compounding.

The present value (PV) of the lease payments for the delivery truck is closest to:

A) $207,050

B) $198,420

C) $207,680

D) $206,900

E) $205,475

$$EMR = \left(1 + \frac{0.06}{4}\right)^{\frac{4}{12}} - 1 = 0.004975$$

$$PV = \frac{4000}{EMR} \times \left(1 - \frac{1}{(1 + EMR)^{60}}\right) = 207{,}058.96$$

Part II: Problèmes (31 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: (9 Points)

Paul and Maria want to have enough money to travel around the world when they retire. They both just turned 30 and will retire when they turn 60. They earn a total of $9,000 after taxes each month. Their monthly expenditures include $3,000 in mortgage payments, $850 in car payments, and $1,450 in other expenses. They approached a fund manager and decided to invest the rest of their income at the end of each year. They expect to earn a 10 percent annual rate of return for each of the next 30 years. When they retire, they will sell their cottage for an expected price of $50,000.

a) (5 Points) Determine how much they will have when they retire.

b) (4 Points) How much can Paul and Maria withdraw annually at the beginning of each year after they retire if they expect to live until they are 90?

A. Solution:

1st Calculate their yearly income available for investment

Monthly income available=$9,000 – $3,000 – $850 –$1,450=$3,700

Yearly available=$(3,700)(12)=$44,400

2nd Calculate the FV of their investment when they retire:

$$FV_{30} = 44{,}400\left[\frac{(1+.1)^{30}-1}{.1}\right] = \$7{,}303{,}535$$

Or using a financial calculator (TI BAII Plus),

N=30, I/Y=10, PV=0, PMT=- 44,400, CPT FV=7,303,535

3rd Calculate the amount they will have when they retire:

$7,303,535 + $50,000 = $7,353,535

B: Solution:

This is an annuity due problem.

PV=7,353,535, k=10%, n=30

$$7{,}353{,}535 = PMT\left[\frac{1-\frac{1}{(1+.1)^{30}}}{.1}\right](1+.1)$$

So, PMT=709,143

Or using a financial calculator (TI BAII Plus),

Hit [2nd] [BGN] [2nd] [Set]

N=30, I/Y=10, PV=- 7,353,535, FV=0, CPT PMT=709,143

Q2: (14 Points) Fill in the missing information **(letters a through n)** in the following table:

Common Shares in Canada					
Company	**Price**	**Required return**	**Dividend growth**	**Current dividend**	**Dividend expected in 1 year**
A	**(a)**	15%	**(b)**	$4.50	$5.00
B	$600	3%	1%	**(c)**	**(d)**
C	$70	**(e)**	5%	**(f)**	$8.00
D	$55	**(g)**	**(h)**	$10.00	$11.00
E	**(i)**	14%	6%	$9.50	**(j)**
F	**(k)**	15%	0%	**(l)**	$18.00
G	$40	5%	−2%	**(m)**	**(n)**

This is Q23 end of chapter 7 questions.

Common Shares in Canada					
Co.	Price	Required return	Dividend growth	Current dividend	Dividend expected in 1 year
A	$P_0 = \frac{5.00}{.15-.1111} = \$128.57$	15%	$g = \frac{5.00}{4.50} - 1 = 11.1111\%$	$4.50	$5.00
B	$600	3%	1%	$D_0 = \frac{12}{1.01} = \$11.88$	$\$600 = \frac{D_1}{.03-.01}$ $D_1 = 600*(.03-.01) = \$12$
C	$70	$70 = \frac{8}{k_c - .05}$ $k_c = \frac{8+3.50}{70} = 16.43\%$	5%	$D_0 = \frac{D_1}{1+g} = \frac{8}{1.05} = \$7.62$	$8.00
D	$55	$55 = \frac{11}{k_c - .10}$ $k_c = \frac{11+5.50}{55} = 30\%$	10%	$10.00	$11.00
E	$P_0 = \frac{D_0(1+g)}{k_c - g} = \frac{9.50*1.06}{.14-.06} = \$125.88$	14%	6%	$9.50	$D_1 = D_0(1+g) = 9.50*1.06 = \$10.07$
F	$P_0 = \frac{18}{.15-.0} = \$120.00$	15%	0%	$18.00	$18.00
G	$40	5%	-2%	$D_0 = \frac{D_1}{1+g} = \frac{2.80}{1+(-.02)} = \$2.86$	$P_0 = \frac{D_1}{k_c - g}$ $40 = \frac{D_1}{.05-(-.02)}$ $D_1 = \$2.80$

Q3: (8 Points)

i. (4 Points) You have just been to see your broker at Acclaim Capital Inc. for advice about investing in the Empire Bank. The broker indicates that the Empire Bank has three different types of securities: debt, preferred shares, and common shares. She states: "Debt is safe because it is a bank and Canadian banks are safe. Empire Bank preferred shares entitle you to vote at the annual general meeting. The Empire Bank has paid a common share dividend of $2.50 per year for the past 18 years so you are guaranteed to receive $2.50 next year; if you don't, the bank will go bankrupt." Comment on your broker's statement. Is she correct?
Question 31 end of chapter 7 question.

No, my broker is incorrect.
Debt: banks are not immune from failure and default and therefore some risk will always exist.
Preferred stock: there are generally no voting rights associated with preferred stock.
Common stock: there is no legal obligation to pay a dividend and the failure to pay a dividend on common stock does not trigger bankruptcy. The fact that the firm has paid a dividend of $2.50 per year for the past 18 years is irrelevant.

ii. (4 points) What is interest rate risk for a bondholder? Assume you are the manager of a $100 million portfolio of corporate bonds and you believe interest rates will fall. What adjustments should you make to your portfolio based on your beliefs? *(Think in terms of buying/selling: long vs. short term bonds; high vs. low coupon bonds; high vs. low yield bonds)*

Answer:
--- Bonds have predetermined cashflows in the form of coupons and face value.
--- Bond risk comes in the form of interest rate risk

- If interest rate decreases, bond prices will increase.
- Therefore, as bondholder if I expect the interest rate to fall, then I should invest more in sensitive bonds.
    - Buy long term, low coupon, and low yield bonds.

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: $g = b * ROE$