Print Last Name: ➔	Print First Name: ➔	ID Number: ➔	
COURSE FINANCE	**NUMBER** COMM 308/2	**SECTIONS:** BB F	
EXAMINATION Mid Term Exam **Version BLUE**	**DATE** October 21, 2011	**TIME** 2 hours	**# OF PAGES 13** including cover

READ THESE INSTRUCTIONS CAREFULLY

- **You must submit a BLUE computer answer sheet.**

- **You are allowed to bring/use one or more calculators**

- **You are allowed to bring one language dictionary (no finance/ mathematics/economics etc. dictionary)**

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

- **For Problems:**
  All answers must be recorded IN INK within this exam.
  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

- **Please ensure you have 13 pages (including the cover page) in this exam.**

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

- **Blank questions or those with multiple answers will not receive any credit.**

SCORES (FOR INSTRUCTORS USE ONLY)

Multiple Choice Questions (Max: 69 Points)	Long Answer Questions			Total (100 Points)
	Question 1 (Max: 12 Points)	Question 2 (Max: 15 Points)	Question 3 (Max: 4 Points)	

Version BLUE

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. An interest rate of 12% effective annual rate is equivalent to a rate of _____ effective three-year rate.

   A) 3.85 %
   B) 12.49%
   C) 36.00%
   D) 40.49%
   E) 51.55%

Eff 3 year rate $= (1.12)^3 - 1$

$= 40.4928\%$

2. Sir George Williams has just retired and is considering buying an annuity, which will pay $5,000 at the end of each month for the next 40 years. The first payment will be received in one month. Sir George's opportunity cost is 6% APR compounded monthly. The present value of this annuity is closest to

   A) $75,231
   B) $180,861
   C) $908,738
   D) $913,281
   E) $2,400,000

EMR $= 0.5\%$

$PV_0 = \frac{5000}{0.005} * \left[1 - \frac{1}{1.005^{480}}\right]$

$= \$908737.92$

3. The RobM Bank 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
   E) Insufficient information

$EAR_1 = \left(1 + \frac{0.09}{4}\right)^4 - 1 = 9.3087\%$

$EAR_2 = \left(1 + \frac{0.0905}{2}\right)^2 - 1$

$= 9.2549\%$

4. Hui Tan has borrowed $25,000 from his local bank. The loan will cost him 12% per year for the first 7 years and 4% per year for the next 15 years. The interest is compounded annually. At the end of the 22 years, the amount he will have to repay is closest to:

A) $50,145.31
B) $99,532.81
C) $100,290.62
D) $135,913.51
E) $302,507.75

$PV_0 = 25,000$
$k_1 = 12\%$ till $t = 7$
$k_2 = 4\%$ from $t = 8$ to 22
$FV_{22} = 1.12^7 * 25,000 * 1.04^{15} = \$99,532.81$

5. For a given effective annual rate, the quoted rate _____ as the compounding frequency increases.

A) Does not change
B) Increases
C) Decreases
D) There is no connection between the effective annual rate and the quoted rate.
E) it depends on the value of the annual rate

6. On January 15, 2009 the XYZ Company issued a 25 year bond. The bond has a coupon rate of 6%, coupons are paid once a year and the face value of the bond is $1,000. Today, Oct. 21, 2012, the bond trades at a price of $1,005.69. The yield on the bond today must be:

A) 6%
B) Greater than 6%
C) Less than 6%
D) Cannot be determined.

YTM < Coupon
⇒ premium.

7. Investors who own bonds having lower credit ratings should expect: (All else equal)

A) Higher default possibilities.
B) Lower coupon payments.
C) Higher present value of cash flows.
D) Lower yields to maturity.
E) None of the above

8. The price of a 10 year semi-annual coupon bond with a face value of $1,000 and a 6.8% annualized coupon rate and yield to maturity of 5.8% is closest to:

A) $928.29

B) $929.11

C) $1,075.08

D) $1,094.27

E) $1,672.05

$$P_0 = \frac{34}{0.029} \times \left[1 - \frac{1}{1.029^{20}}\right] + \frac{1000}{1.029^{20}} = 1,075.08$$

9. Tow bonds pay the same amount each year; have identical maturities and par (or face) vale and the same risk. Bond 1 pays its coupon twice a year while bond 2 pays its coupon once a year. Which will trade at a higher price?

A) Bond 1

B) Bond 2

C) They will both trade at the same price

D) Cannot be determined without knowing the coupon rate and the yield to maturity of the two bonds

E) Cannot be determined without knowing the time to maturity

10. Consider the following two statements:

I. A firm's sustainable growth rate decreases with higher profit margins, higher asset turnover, and higher debt.

II. A firm's sustainable growth rate can be estimated by multiplying the earnings retention ratio by the return on equity.

A) I is correct, II is incorrect

B) I is correct, II is correct

C) I is incorrect, II is incorrect

D) I is incorrect, II is correct

E) Insufficient information

11. Polar Express Corporation has just reported a earning of $400,000. It has 250,000 common shares outstanding with a book value of $2 million. The firm always maintains a retention ratio of 25 percent. Which of the following choices is closest to the firm's price-earning ratio? Polar Express Corporation's required rate return is 10 percent?

A) 5

B) 10

C) 15

D) 20

E) 25

$EPS = \frac{400,000}{250,000} = \$1.6$ $D = 0.75 * 1.6 = \$1.2$

$ROE = \frac{400,000}{2000,000} = 20\%$

$g = 0.25 * 0.2 = 5\%$

$P = \frac{1.2 * 1.05}{0.1 - 0.05} = \$25.2$ $P/E = \frac{25.2}{1.6} = 15.75$

12. The dividend yield:

A) is equal to the dividend amount divided by the required rate of return of the stock.

B) when added to the capital gain yield is equal to the required rate of return.

C) is the rate at which the price of the stock grows.

D) is always equal to the growth rate.

E) Both B and D.

13. If the interest rate increases, the difference between the 'present value of an annuity due' and 'the present value of an ordinary annuity' will_____. (Assuming payments and number of periods are the same)

A) Increase

B) Decrease

C) Insufficient information to tell

D) Remain the same

E) Depends on the relationship between the present value and the future value of the payments.

14. You are choosing between investments offered by two different banks. One promises a return of 10% for three years using simple interest while the other offers a return of 10% for three years using compound interest. You should:

A) Choose the simple interest option because both have the same basic interest rate.

B) Choose the compound interest option because it provides a higher return.

C) Choose the compound interest option only if the compounding is for monthly periods.

D) Choose the simple interest option only if compounding occurs more than once a year.

E) Choose the compound interest option only if you are investing less than $5,000.

15. Your broker offers you the opportunity to purchase a bond with coupon payments of $90 per year and a face value of $1,000. If the yield to maturity on similar bonds is 8%, this bond should:

A) Sell for the same price as the similar bond regardless of their respective maturities.

B) Sell at a premium.

C) Sell at a discount.

D) Sell for either a premium or a discount but it's impossible to tell which.

E) Sell for par value.

16. A bond matures in 12 years and pays an 8 percent annual coupon. The bond has a face value of $1,000 and currently sells for $985. What is the bond's current yield and yield to maturity?

A) Current yield = 8.00%; yield to maturity = 7.92%

B) Current yield = 8.12%; yield to maturity = 8.20%

C) Current yield = 8.20%; yield to maturity = 8.37%

D) Current yield = 8.00%; yield to maturity = 8.37%

E) Current yield = 8.12%; yield to maturity = 7.92%

$CY = \frac{80}{985} = 8.122\%$

Selling at discount

$\Rightarrow YTM >$ Coupon rate

$\therefore YTM > 8\%$

17. An interest rate of 20% compounded monthly is equivalent to a rate of _____ compounded quarterly.

$EAR = \left(1 + \frac{0.2}{12}\right)^{12/4} - 1 = 0.05084$

A) 22.22%

B) 20.00%

C) 22.08%

APR Comb. Quarterly $= 4 * 0.05084$

$= 20.335\%$

D) 21.38%

E) 20.34%

18. If a bond sells at a premium, then which of the following relationships hold true? (P0 represents the price of a bond and YTM is the bond's yield to maturity.)

A) P0 < par and YTM > the coupon rate.

B) P0 > par and YTM > the coupon rate.

C) P0 > par and YTM < the coupon rate.

D) P0 < par and YTM < the coupon rate.

19. Which of the following is NOT true about the P/E ratio?

A) A comparison of one company with its peers also involves a great deal of subjectivity regarding company-specific characteristics.

B) P/E ratios only work well on companies in the high growth stage of their lifecycle.

C) P/E ratios are uninformative when companies have negative or very small earnings.

D) The volatile nature of earnings implies a great deal of volatility in P/E multiples.

E) None of the above

20. Given no change in required returns, the price of a stock whose dividend is constant will:

A) Increase over time at a rate of r%.

B) Decrease over time at a rate of r%.

C) Increase over time at a rate equal to the dividend growth rate.

D) Decrease over time at a rate equal to the dividend growth rate.

E) Remain unchanged.

21. If you expect interest rates to rise, you would prefer to buy bonds with

A) Short maturities and high coupons

B) Long maturities and high coupons

C) Long maturities and low coupons

D) Short maturities and low coupons

E) It will depend on

22. Suppose investment A and investment B have identical cash flows. Why would an investor pay more for investment A than investment B?

A) This is incorrect. You would always pay the same amount for two investments with equal future cash flows.

B) The risk in the cash flows for investment A is greater than the risk of the cash flows of investment B.

C) The risk in the cash flows for investment B is greater than the risk of the cash flows of investment A.

D) The return required for investment B is lower than the return required for investment A.

23. Which answer is FALSE regarding bond prices and interest rates?

A) Bond prices and interest rates move in opposite directions.

B) The price of a bond is the present value of the coupon payments and the face value.

C) The prices of short-term bonds display greater price sensitivity to interest rate changes than do the prices of long-term bonds.

D) Interest rate risk can be described as the risk that changes in market interest rates will cause fluctuations in the bond's price.

E) The prices of high-yield bonds display greater price sensitivity to interest rate changes than do the prices of low-yield bonds.

Part II: Problems (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: (12 Points)

Stable Industries (SI) reported earnings of $20 million. SI's policy is to pay out 100% of its earnings in dividends (for now assume that this policy is expected to continue for the foreseeable future). SI has 2.5 million shares outstanding. The required rate of return on SI stock is 8%.

a. **(3 Points)** What is the value of a single share of SI stock (assuming that they do not have any investment opportunities)?

$$EPS_0 = \frac{20}{2.5} = \$8$$

$$P_0 = \frac{EPS_0}{0.08} = \frac{8}{0.08} = \$100$$

b. **(9 Points)** You find out that SI has two new investment opportunities:

Project A would require SI to invest \$16,000,000 in one year (at t = 1) and then the investment would generate \$2,400,000 a year forever with the first cash flow received at t = 2.

Project B would require SI to invest \$24,000,000 in one year (at t = 1) and then the investment would generate \$3,000,000 a year for four years with the first cash flow received at t = 2.

As an astute investor, how much would you pay for a single share of Stable Industries now that you found out about the new investment opportunities? (Assume managers act in the best interest of shareholders when they decide about implementing investment opportunities.)

	0	1	2	3	4	5
A		-16	24	24	24	24 ... ∞
B		-24	3	3	3	3

$PV_1(A) = -16 + \frac{2.4}{0.09} = 14$

$PV_0(A) = \frac{14}{1.08} = 12.962962$ ← Accept project (+ve value)

$PV_1(B) < 0$ => Reject project (-ve value)

$PVNO(\text{per share}) = \frac{PV_0(A)}{2.5} = \frac{12.962962}{2.5} = \$5.185$

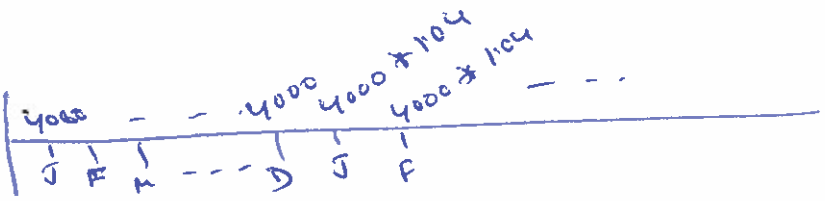
Price per share = \$100 + \$5.185

= \$105.185

Q2: (15 Points) ***This question is based on your assignment 1:***

Suppose that after you graduate you decide that finance was the best thing that has ever happened in your lives and in a fit of collective glee your class decides to endow a chair in the Finance Department. You want your endowment to provide $4,000 per month to whatever professor holds the chair. Further, you also give the lucky holder a 4% annual cost of living adjustment. That is, all payments made in the current year will be $4,000, all payments made next year will be $4,000 × (1.04), and so on. You want the chair to continue indefinitely.

If interest rates are 10% (EAR), how much money does your class need to raise today for this worthy project?



$$EMR = (1.1)^{1/12} - 1 = 0.797411\%$$

$$FV(\text{year } 1) = \frac{4000}{EMR} * \left((1+EMR)^{12} - 1 \right)$$

$$= \$50162.1464$$

$$PV_0 = \frac{FV(\text{year } 1)}{EAR - g} = \frac{50162.1464}{0.1 - 0.04}$$

$$= \$836035.774$$

Q3: (4 Points)

Do you think agency problems can arise in sole proprietorships and/or partnerships? Will it be more or less severe than those arising in corporations? (Explain why it might be more or less)

Yes

Agency theory attempts to explain a loss in value or wealth, which occurs whenever one party acts (as the agent) for another. Such is the situation in the typical corporation where management (the agent) is hired to operate a firm for the shareholders (the principals). Agency theory suggests that agents tend to make decisions, which will be of benefit to them, even at the cost of principle's wealth.
In a partnership structure, management decisions are typically made by GP (General Partners) with no involvement from LP (Limited partners). Therefore, agency problem can arise between GP and LP. The level of agency problem vis-à-vis in a corporate structure might still be less due to more defused ownership in corporations. LP can monitor the firm better then the thinly spread-out corporate shareholders.
Even in a sole proprietorship, an agency relationship may arise. The proprietor may decide to bring in additional funds in the form of debt. At this point, the proprietor is in essence acting as the agent for the creditor in the management of the business. The proprietor now has an incentive to assume greater risk since other funds, those of the creditor, are at risk rather than the funds of the proprietor. Both Corporations and Partnerships are also prone to this type of agency problem. The agency problem between owners and managers (and between GP and LP) does not exist in sole proprietorship. Therefore, most likely the agency problems in this type of business structure are likely to be lower than both corporations and partnerships.

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: $g = b * ROE$