

Name \_\_\_\_\_

Student Number \_\_\_\_\_

TEST 1

MGF 301 Corporation Finance  
Spring 2012

Please sign name in box

Please tear off the answer sheet and answer all of the following questions on the answer sheet.  
(Note: Total Points = 100; Multiple Choice = 4 points each)

1. If you are paying interest at a 5% annual rate on a loan, which of the following would you have the lowest cost?

- (a) a loan that uses simple interest without compounding
- (b) a loan that compounds interest quarterly (i.e., 4 times per year)
- (c) a loan that compounds interest daily (i.e., 365 times per year)
- (d) cannot be determined

2. ABC corp. reported no news yesterday, but its price decreased yesterday by 10% in trading on the New York Stock Exchange. Which of the following is true about ABC yesterday?

- (a) the book value of the equity stayed the same
- (b) we need to know the number of shares to know if the market value of equity went down
- (c) the decrease in the stock price decreased the amount of cash that ABC has
- (d) none of the above

3. If you make payments on a monthly basis and the interest is compounded daily, how would you calculate the effective monthly interest rate with daily compounding? Set up a calculation using r as the annual interest rate. (6 points)

**Effective Monthly Rate = monthly rate with daily compounding. To find this, first find the daily rate and then compound this by about 30 days to get a monthly rate.**

**Daily rate =  $r/365$     Effective monthly rate =  $(1 + r/365)^{30} - 1$**

4. A 6 year bond with a coupon rate of 7% was issued two years ago. It has a \$1,000 face value and pays a semi-annual coupon. If the yield to maturity is 6%, how would you calculate the bond price? Set up your calculation in detail but do not solve it. (6 points)

$$\text{Price} = 35/(1.03) + 35/(1.03^2) + \dots + 1035/(1.03^6)$$

5. Julia is planning for retirement and wants to have \$500,000 forty years from now (in time 40). Which formula will calculate how much she needs to save today (time 0) to reach her goal?

- (a)  $PV = [500,000 \times (1+r)^{40}] / (1+r)^{40}$
- (b)  $PV = [500,000 \times 40] / (1+r)^{40}$
- (c)  $PV = 500,000 / (1+r)^{40}$
- (d)  $FV_{40} = 500,000 \times (1+r)^{40}$

6. Your retirement plan will pay you a series of monthly payments that begin 30 years from today (in month 360) and that continue forever in perpetuity. The first monthly payment will be \$1000 and this will grow by 3% every month after this. Set up a formula to calculate the present value of this retirement plan if the annual discount rate is 5%. Note: you do not need to solve. ( 6 points)

**Note: this question has a flaw as written because 5% annually is a smaller interest rate than 3% monthly which will cause the growing perpetuity model to not work. So I accepted two answers:**

**Answer 1 (as written in question):**  $PV = 1000/((.05/12) - .03)/(1 + .05/12)^{360}$

**Answer 2 (if 5% is a monthly rate):**  $PV = 1000/((.05 - .03)/(1 + .05)^{360})$

7. You have won the lottery's \$1,000 a week for life contest. If you expect to live for 60 more years, set up a formula to calculate the present value of the prize if the appropriate discount rate is 5% on an annual basis. (Note: you do not need to solve your calculation). (6 points)

**PV = 1000 x (annuity factor at .05/52 interest for t = 60\*52)**

**or**

**PV = 1000/(1 + .05/52) + 1000/(1 + .05/52)<sup>2</sup> + ... + 1000/(1+.05/52)<sup>60\*52</sup>**

8. Using the lottery payout from question 7, mark each of the following as (T)true or (F)alse:

- \_F\_ (a) If the discount rate goes up, the present value of your prize will go up**
- \_F\_ (b) If the payment stream was a perpetuity instead of limited to 60 years, the present value of the prize would be an infinite amount of money**
- \_T\_ (c) The present value of the payments will be greater than earning \$4,000 each month over the next 60 years**

9. Jason has a choice of receiving \$25,000 next year (time 1) or \$30,000 in two years (time 2). If the discount rate is 10%, which choice has a higher present value? Write your solution method along with your answer on the answer sheet. (6 points)

**PV<sub>1</sub> = 25000/1.10 = 22,727.27**

**PV<sub>2</sub> = 30000/1.10<sup>2</sup> = 24,793.39**

**Choice 2 has a higher PV**

10. Mark each of the following as True (T) or False (F). (2 points each)

- \_F\_ a. In the secondary market, the company issues stocks and/or bonds to investors**
- \_F\_ b. If a company does not pay a dividend, there is no way to estimate the stock price**

- Tc. Book value of equity is usually lower than market value of equity
11. Which of the following is false about a 10 year 8% bond with a face value of 1,000 that is selling for 1050?
- (a) the bond will pay \$80 each year as interest
  - (b) if the yield to maturity remains constant over the next year, the price will be higher next year**
  - (c) the yield to maturity is less than 8%
  - (d) none of the above

12. Today, WXZ issued a bond paying interest of X, with face value of \$1,000 and a 30 year maturity. The bond was issued with a price of \$1,010 and was rated A by Standard & Poors. Without doing any calculations, which of the following is false?

- (a) the yield to maturity for this bond is fixed when issued and will not change over the 30 year life**
- (b) the bond currently pays more interest than investors require given the risk
- (c) the bond's rating may change over the life of a bond
- (d) none of the above

13. For the bond in question 12, assume that two changes happen over the next 5 years: (a) overall interest rates in the economy fall by two percent and (b) WXZ struggles financially and its rating changes to B. What will be the effect of these two changes on the bond price? Explain your answer in the space on the answer sheet. (6 points)

**(a) if interest rates fall by 2% in the economy, this will cause YTM to go down for the WXZ bond. So the price of WXZ bond will go up.**

**(b) if the bond rating falls to B, the company has higher risk of default and YTM will go up which will cause the price of the bond to go down.**

**As the two effects are in different directions, it is not possible to tell without more information whether the net effect is an increase of decrease.**

14. You have won \$100,000 in a contest. You are given two choices: (A) receive 10 payments (10,000 today (time 0) and 10,000 each year from time 1 through time 9); (B) receive 5 payments (20,000 each year for time periods 0 through 4). Which statement is true if  $r > 0$ ?

- (a) option A has a higher present value
- (b) option B has a higher present value**
- (c) option A and option B have the same present value because you receive \$100,000 in total in each option
- (d) none of the above is true

15. Julia is taking out a 6 year loan of \$20,000 to buy a car. If the annual interest rate is 6% and she will make equal monthly payments, which calculation correctly finds her payment?

- (a) =  $20,000/6$  year annuity factor at 6%
- (b) =  $20,000/72$
- (c) =  $20,000/72$  month annuity factor at .5%**