

SECTION I Questions 1-5 are worth 2 marks each

Answer TRUE (T) or FALSE (F) by circling the appropriate letter

- 1) Your firm seeks to obtain a short-term loan from a local bank. The banker quotes you ☐ T ☐ F* a rate of 9%. This is a real rate.
- 2) Any regular coupon bond of any maturity will sell for its face value if the coupon rate is ☐ T* ☐ F the same as the market rate of interest.
- 3) A firm must make its dividend payments to preferred shareholders before it makes any ☐ T ☐ F* interest payments to its bondholders.
- 4) If a firm experiences a financial loss for the year, the loss is shared equally by the ☐ T ☐ F* bondholders and shareholders.
- 5) The board of directors has the power to act on behalf of the shareholders to hire and fire ☐ T ☐ F* the operating management of the firm. In a legal sense, the directors are principals and the shareholders are agents.

SECTION II Questions 6-9 are worth 3 marks each

Indicate your answer by circling the appropriate letter

- 6) A bond sold five weeks ago for \$900. The bond is worth \$950 in today's market. Assuming no changes in risk, which of the following is true?
 - a) The face value of the bond must be \$900
 - b) The bond must be within one year of maturity
 - c) Interest rates must be lower now than they were five weeks ago*
 - d) Interest rates must be higher now than they were five weeks ago
 - e) The coupon payment of the bond must have increased
- 7) Suppose you are trying to find the present value of two different cash flows using the same interest rate for each cash flow. One is \$3 three periods from now, the other is a \$1 flow two periods from now. Which of the following is true about the discount factors used to value the cash flows?
 - a) The factor for the flow three periods away is greater than the factor for the flow received two periods from now

- b) The factor for the flow three periods away is smaller than the factor for the flow that is received two periods from now*
 - c) The two factors are always equal
 - d) Since the payments are different, no statement can be made regarding the factors to be used
 - e) The astute investor will factor in the time differential and choose the payment that arrives the soonest
- 8) Which of the following situations makes no sense at all?
- a) A bond with a feature that allows the holder to sell the bond back to the company at a preset price
 - b) A bond with a market rate of 17% carrying a coupon of 10%
 - c) Preferred stock that is convertible into common stock
 - d) A perpetual, zero coupon bond*
 - e) Common stock that sells for \$7.50 per share even though it pays no dividends
- 9) Given no change in required returns, the value of a share of stock whose dividend is constant will
- a) increase over time at a rate of r per cent
 - b) decrease over time at a rate of r per cent
 - c) increase over time at a rate equal to the dividend yield
 - d) decrease over time at a rate equal to the dividend yield
 - e) remain unchanged*

SECTION III Questions 10-16 are worth 4 marks each

- 10) Starting today, you make fifteen annual \$1,000 deposits into an account that pays an interest rate of 5.25%. How much will be in the account at the end of year 15?
- a) \$23,143.49* $FV(15) = 1,000FVA(5.25\%, 15)(1.0525) = \$23,143.49$ This is an annuity due
 - b) \$21,989.07
 - c) \$39,782.15
 - d) \$24,495.48
 - e) \$23,729.84
- 11) In order to help you through university, your parents just deposited \$25,000 into a bank account (great parents!) paying 8% interest. You plan to

withdraw equal amounts from the account at the beginning of each of the next four years (a total of 4 withdrawals starting today). What is the MOST you can withdraw annually?

- a) \$6,125.43 $PV(0) = PMT \cdot PVA(8\%, 4)(1.08)$
- b) \$6,988.91* $25,000 = PMT \cdot (3.3121)(1.08)$
- c) \$7,133.84 $PMT = \$6,988.91$
- d) \$7,548.02
- e) \$8,154.71

12) (Tougher problem) Your employer has agreed to make 80 quarterly payments of \$400 each into an account to fund your early retirement. The first payment will be made 3 months from now. At the end of 20 years (80 payments), you will be paid 10 equal annual payments, with the first payment to be made at the beginning of year 21 (or the end of year 20). The funds will be invested at a nominal rate of 8%, quarterly compounding, during both the accumulation and the distribution periods. How large will each of your 10 receipts be? (Hint: you must find the EAR and use it in one of your calculations.)

- a) \$13,119 Amount in fund = $FV(80) = \$400FVA(2\%, 80) = \$77,508.78$ 8% annual rate = 2% quarterly rate
 - b) \$12,342 $EAR = (1+.02)^{**4}-1 = 0.08243216 = 8.2432\%$
 - c) \$11,678 $\$77,508.78 = PMT \cdot PVA(8.2432\%, 10)(1+0.082432)$
- Since this is an annuity due
- d) \$10,789* Solve to get \$10,788.78
 - e) \$7,561 ** means exponentiation

13) Long-term debt of Topstone Industries is currently selling for 108.9% of its face value, up from last year's 90%. The issue matures in 10 years and pays an annual coupon of 8% of face value. What is the yield to maturity of the firm's debt? Choose the range below that contains the solution.

- a) 6.70-6.85%* Using a financial calculator: $YTM = 6.7475\%$
- b) 7.40-7.55% Using the approximation: $YTM = [80 + ((1,000 - 1,089)/10)] / ((1,000 + 1,089)/2)$
- c) 7.90-8.05% $YTM = 6.8071\%$
- d) 9.50-9.65%

e) 10.40-10.55%

14) XYZ Industries just issued 10-year, 8% coupon bonds at par. Outstanding bonds of ABC Corp., a close competitor, have a maturity of 10 years and are viewed by investors as being of about the same risk as the XYZ bonds, but carry a 5% coupon. Assume market interest rates rise by 5 percentage points. The value of the bonds will fall by more than the bonds of their competitor. (Assume all bonds pay interest annually.)

- a) XYZ; \$14.46 Initially: market interest rate = 8%
b) XYZ; \$38.52* After rise: market interest rate = 13%
c) XYZ; \$103.67 Initially: XYZ price = \$1,000 since it is sold at par
d) ABC; \$14.46 After rise: XYZ price = $80PVA(13\%,10) + 1,000PV(13\%,10) = \728.69
e) ABC; \$38.52 Decline = $\$1,000 - \$728.69 = \$271.31$
Initially: ABC price = $50PVA(8\%,10) + 1,000PV(8\%,10) = \798.70
Note that bond ABC cashflows are discounted at the same rate as XYZ since risk is the same. After rise: ABC price = $50PVA(13\%,10) + 1,000PV(13\%,10) = \565.90
Decline = $\$798.70 - \$565.90 = \$232.80$
XYZ price falls more than ABC by: $\$271.31 - \$232.80 = \$38.51$ (rounding error)

15) Suppose that sales and profits of Bradley Corp. are growing at a rate of 30% per year. At the end of four years the growth rate will drop to a steady 4%. At the end of year 5, Bradley will issue its first dividend in the amount of \$2.00 per share. If the required return on Bradley is 16%, what is the value of a share of Bradley stock? Assume that dividends grow at the same rate as earnings after year 4.

- a) \$7.49 $P(0) = [D(5)/(r - g)] PV(16\%,4) = [2.00/(.16-.04)]PV(16\%,4) = \9.20
b) \$7.67
c) \$8.17

- d) \$9.20*
- e) \$9.91

16) A company just paid a dividend of \$3.00. For the next two years dividends are expected to grow at the rate of 6%. Thereafter, dividends are expected to grow at the rate of 3% forever. If the required return is 16%, what is the current price of the company's stock?

- a)\$25.09* $P(0) = [3.00(1.06)]PV(16\%,1) + [3.00(1.06)^2]PV(16\%,2) +$
- b)\$25.82 $[3.00(1.06)^2(1.03)/(.16-.03)]PV(16\%,2) = 2.74 +$
- $2.51 + 19.84 = \$25.09$
- c)\$26.15
- d)\$27.58 ** means exponentiation
- e)\$29.45