

NANYANG TECHNOLOGICAL UNIVERSITY

SEMESTER 1 EXAMINATION 2014-2015

BU8201 – Business Finance

November 2014

Time Allowed: 2 hours

INSTRUCTIONS

- 1 This paper contains **TWO(2)** questions and comprises **EIGHT(8)** pages and **ONE(1)** appendix of **TWO(2)** pages.
 - 2 Answer **ALL** questions.
 - 3 The number of marks allocated is shown at the end of each question.
 - 4 For Question 1, shade your answers to the multiple-choice questions on the Scantron sheet. Use only 2B pencils and erasers. Complete the front page of the Scantron sheet as follows:
 - (a) Write your “Subject Title” as “Business Finance”.
 - (b) Write your “Subject Code” as “BU8201”.
 - (c) Write your Seat Number clearly.
 - (d) Write the date of the examination clearly.
 - (e) Write and **shade** your **MATRICULATION NUMBER** in the box provided for matriculation number. Read the examples shown and ask for clarification if you have any doubt.
 - 5 Write your answer to the question in Section B on the answer book.
 - 6 Answers will be graded for content and appropriate presentation, and compliance with instructions.
 - 7 The Scantron sheet and the answer script must be handed in before students leave the examination hall.
-

SECTION A**Question 1**

This question consists of **TWENTY(20)** multiple-choice questions. Choose the correct answer from the alternatives given. In your **SCANTRON SHEET**, shade the most correct answer (A), (B), (C), (D) or (E) next to the question number. Each multiple-choice question carries **FOUR(4)** marks.

- (1) Temla Inc.'s common stock currently sells for \$50.00 per share; the company expects to earn \$2.50 per share during the current year (i.e. $EPS_1 = \$2.50$). Temla's expected payout ratio is 30%, and its expected constant growth rate of dividend is 6.0% per year. New stock can be sold to the public at the current price, but a flotation cost of 8% would be incurred. By how much would the cost of new stock exceed the cost of retained earnings?
- (A) 0.08%
 - (B) 0.10%
 - (C) 0.13%
 - (D) 0.14%
 - (E) 0.22%
- (2) Which of the following statements is most CORRECT?
- (A) The Treasury yield curve will be downward sloping if inflation is expected to drop over the coming years and the Maturity Risk Premium is negative.
 - (B) It is possible for the Treasury yield curve to be downward sloping but the corporate yield curve to be upward sloping.
 - (C) The more liquid the market for a particular stock is, the higher will be its Liquidity Premium.
 - (D) The required return on a stock is the sum of the real risk-free rate, the Inflation Premium and the stock's Maturity Risk Premium, Default Risk Premium and Liquidity Premium.
 - (E) If the Default Risk Premium is zero, the corporate yield curve cannot be downward sloping.
- (3) Bemata Corp's 5-year bonds currently have a yield to maturity of 8.2% while its 8-year bonds yield 9.8%. The maturity risk premium (MRP) is estimated to be $0.2\%(t)$, where t is equal to the time to maturity. The default risk and liquidity premiums for this company's bonds are believed to be the same for all bonds issued by this company. The real risk-free rate, r^* , is assumed to be constant at 2%. The average expected inflation rate over the coming 5 years is 3%. Disregard cross-product terms, i.e., if averaging is required, use the arithmetic average. The average expected inflation over the sixth, seventh and eighth year is closest to:
- (A) 4.8%
 - (B) 5.0%
 - (C) 5.3%
 - (D) 5.7%
 - (E) 6.2%

Note: Question No. 1 continues on page 3

Question 1 (continued)

- (4) The yield of a 5-year Treasury security is 6% while the yield of a 12-year Treasury security is 6.8%. Based on Pure Expectations Hypothesis, the yield of a 4-year security starting 8 years from now is 8%. The yield of a 3-year security starting 5 years from now is closest to:
- (A) 6.91%
 - (B) 7.21%
 - (C) 6.23%
 - (D) 8.23%
 - (E) 6.55%
- (5) The dividends of Stock ABC are expected to grow at 35% per year for 5 years and thereafter, the dividends will grow at a constant growth rate of 7% per year forever. The required return on this stock is 12% per year. Which of the following statements is most CORRECT?
- (A) In the eighth year, the stock price will grow at 7% per year.
 - (B) During the first five years, the price of the stock will grow at 35% per year.
 - (C) During the first five years, the price of the stock will grow at 12% per year.
 - (D) In the eighth year, the stock price will grow at 12% per year.
 - (E) We cannot tell what the growth rate of the stock price in the eighth year is, as the current dividend is not given.
- (6) Ethel Ltd recently reported \$453,000 of operating costs other than depreciation, and \$61,200 of depreciation. The firm's net income was \$354,240. It had \$600,000 of outstanding bonds that carry an 8% interest rate, and its corporate tax rate was 20%. Dividend paid was \$50,000. The value of its inventory was reported as \$130,000. The Inventory Turnover of Ethel Ltd was closest to:
- (A) 0.13
 - (B) 0.82
 - (C) 2.85
 - (D) 5.24
 - (E) 7.73
- (7) Which of the following statements is most CORRECT?
- (A) If a firm's ROE is below the industry average, but its profit margin and debt ratio are both above the industry average, then its total assets turnover must be below the industry average.
 - (B) If a firm decreases its sales while holding its accounts receivable constant, then, other things held constant, its days' sales outstanding will decline.
 - (C) Suppose a firm's debt increases from 30% of total assets to 45%, its total assets turnover ratio falls from 0.8 to 0.6, but at the same time its profit margin rises from 7% to 7.5%. Under these conditions, the ROE will increase.
 - (D) Statements (A) and (B) are correct.
 - (E) Statements (A) and (C) are correct.

Note: Question No. 1 continues on page 4

Question 1 (continued)

- (8) Which of the following statements is most CORRECT?
- (A) When an investor buys a bond and holds it to maturity, he will always enjoy a realized return equal to the yield to maturity, even if there is a default.
 - (B) An investor should never buy a bond whose price will fall over time.
 - (C) A bond with longer maturity and a lower coupon will have more interest rate price risk compared to a similar bond with shorter maturity and higher coupon.
 - (D) An investor should always buy a bond whose price will rise over time.
 - (E) All other things being equal, a bond with lower credit rating will have a lower yield to maturity.
- (9) Stock A and Stock B are expected to pay the same dividend of \$2.00 per share at the end of the year. Stock A has a beta of 1.5 and Stock B has a beta of 1.1. The market risk premium is 6%, and the risk-free rate is 3%. Stock A's dividend is expected to grow at a constant rate of 5% a year forever, while Stock B's dividend is expected to grow at a constant rate of 4% per year forever. Assume that the market is in equilibrium. Which of the following statements is most CORRECT?
- (A) Currently, Stock B's price is higher, but over time it will eventually have a lower price than Stock A's.
 - (B) Stock A must have the lower required return.
 - (C) Stock A has a lower dividend yield than Stock B.
 - (D) Stock A has a lower capital gains yield.
 - (E) Statements (A) and (C) are true.
- (10) Which of the following statements is most CORRECT?
- (A) There is benefit in portfolio diversification only if correlation of returns between stocks is negative.
 - (B) An investor who holds only one stock which has high standard deviation of returns should be rewarded with a high return as he faces higher risk from his investment.
 - (C) As investors' risk aversion increases, the market risk premium increases.
 - (D) Security Market Line states that a stock's expected return is the sum of the risk-free rate and a risk premium that reflects the stock's risk after diversification.
 - (E) To obtain the historical beta of a stock, we do a cross-sectional regression of this stock's return against the beta of all stocks.

Note: Question No. 1 continues on page 5

Question 1 (continued)

- (11) Which of the following statements is most CORRECT?
- (A) All else being equal, an increase in a company's stock price will increase its marginal cost of new common equity, r_e .
 - (B) When calculating the cost of preferred stock, a company needs to adjust for taxes, because preferred stock dividends are deducted before tax is applied to the profit of the corporation.
 - (C) If a company's tax rate increases but the YTM on its noncallable bonds remains the same, the after-tax cost of its debt will fall.
 - (D) Since retained earnings easily accumulate and are not borrowed, the after-tax cost of retained earnings is usually much lower than the after-tax cost of debt.
 - (E) All else being equal, a decrease in a company's stock price will decrease its marginal cost of retained earnings, r_s .
- (12) A portfolio consists of \$200,000 of Stock A which has a beta of 0.8, \$500,000 of Stock B which has a beta of 1.5, \$350,000 invested in the market portfolio and \$400,000 of risk-free asset. Given that the risk-free rate is 2% and the required market return is 8%, the required return of this portfolio is closest to:
- (A) 8.95%
 - (B) 7.21%
 - (C) 6.95%
 - (D) 5.21%
 - (E) 7.52%
- (13) Rissler's stock price is \$100 per share, and its expected dividend at the end of this year is \$4 a share. The stock's required return is 12%, and the dividend is expected to grow at a constant rate forever. What is the expected price of the stock 6 years from now?
- (A) \$158.69
 - (B) \$197.38
 - (C) \$60.64
 - (D) \$152.80
 - (E) \$124.45
- (14) The risk-free rate is 3% while the market return is 9%. Tammy Toys has a debt-to-capital ratio of 2:5 and it has no preferred stock. Its cost of equity is 12%. Tammy Toys is subjected to a corporate tax rate of 20%. The value of the unleveraged beta of Tammy Toys is closest to:
- (A) 1.32
 - (B) 1.50
 - (C) 0.65
 - (D) 0.98
 - (E) 0.88

Note: Question No. 1 continues on page 6

Question 1 (continued)

- (15) Faisal took a 9-year loan of \$100,000 from a bank. To repay the loan, Faisal will pay \$10,000 at the end of Year 1 (at $t=1$), \$12,000 at the end of Year 2, and \$15,000 at the end of Year 3, plus a fixed but currently unspecified cash flow, K , at the end of each year from Year 4 through Year 9. The loan rate is 7% per year. The value of K (rounded to nearest \$100) is closest to:
- (A) \$10,500
 - (B) \$12,600
 - (C) \$17,500
 - (D) \$17,200
 - (E) \$18,200
- (16) Which of the following statements is most CORRECT?
- (A) The clientele effect is the best explanation for why companies tend to vary their dividend payments from quarter to quarter.
 - (B) Stock repurchases increase the number of outstanding shares.
 - (C) Stock price increase at a time when a dividend increase can be explained by the tax preference theory.
 - (D) An investor who needs cash but is not paid dividend can sell a small amount of shares to generate the cash needed.
 - (E) A company sends a negative signal to the marketplace when it announces an increase in the dividend, leading to a drop in its share price. This is because investors interpret the dividend increase as a signal that the firm expects fewer good investment opportunities in the future.
- (17) Assume that all projects being considered have normal cash flows and are equally risky. Which of the following statements is most CORRECT?
- (A) When calculating the cash flows of a project, the net effect of depreciation is given by the product of depreciation and the tax rate.
 - (B) In the calculation of MIRR, one of the steps involves compounding cash inflows at the MIRR.
 - (C) In the calculation of MIRR, one of the steps involves discounting cash outflows at the MIRR.
 - (D) When choosing between mutually exclusive projects, all projects with positive NPVs will be accepted.
 - (E) For a 5-year project with initial investment of \$ Z , followed by \$ Y per year for five years, the Equivalent Annual Annuity of this project is \$ Y .

Note: Question No. 1 continues on page 7

Question 1 (continued)

- (18) Shanel bought an apartment and obtained a loan of \$500,000 from a bank which requires her to pay monthly mortgage payments over 25 years at a mortgage rate of 3% per year. What is the principal repayment component of the 37th monthly mortgage payment (round answer to nearest \$1)?
- (A) \$1,145
 (B) \$1,226
 (C) \$1,208
 (D) \$1,180
 (E) \$1,254
- (19) Socray Resources' Free Cash Flow for year 1 (FCF_1) is \$3 million, while its Free Cash Flow for year 2 (FCF_2) is \$5 million. Thereafter, the free cash flow is expected to grow at a constant rate of K%. Socray's market value of debt and preferred stock is \$20 million and \$10 million respectively. The number of common stock is 10 million shares. The WACC of Socray is 8%. Given that the Intrinsic Value of its common stock is \$12.7099, the value of K% (rounded to the nearest 0.1%) is closest to:
- (A) 4.5%
 (B) 4.8%
 (C) 5.0%
 (D) 5.3%
 (E) 6.0%
- (20) Project Renson has a WACC of 5%. This project is repeatable. The value of Project Renson done twice (the second project immediately follows after the first project) is closest to:

Year	0	1	2
Cash flow	-\$30,000	\$15,000	\$25,000

- (A) \$13,276
 (B) \$6,961
 (C) \$13,923
 (D) \$20,000
 (E) \$22,038

(TOTAL: 80 marks)

SECTION B**Question 2**

- (a) For the current year, Cleary Imaging has outstanding debt of \$400,000 which incurs interest at a rate of 3% per year. Its corporate tax rate is 20%. It estimates sales of \$480,000 and operating costs (other than depreciation) of \$200,000. Given that Cleary's operating cash flow for the current year is \$236,800, what is its depreciation (rounded to nearest \$10)?
- (5 marks)
- (b) Today, Samuel bought Bond ABC which has a maturity of seven years at the price of P_0 . Bond ABC pays an annual coupon of 6% and has a par value of \$1,000. Samuel holds this bond for one year and sells it at that time. After this one-year holding period, the yield to maturity of ABC for the remaining 6-year period is 7%. The actual or realized return experienced by Samuel over his one-year holding period is -4.5% (a negative realized return). Calculate the value of P_0 , rounded to the nearest \$10.
- (5 marks)
- (c) Terry Design is considering a project with an IRR of 17.766423%. This project has an initial cost of \$50,000 and cash flows of \$10,000, \$12,000, \$X and \$42,000 at Year 1, Year 2, Year 3 and Year 4 respectively, where X is a positive number. The project's WACC is 6%. Calculate the Equivalent Annual Annuity (EAA) of this project, rounded to the nearest \$10.

(10 marks)

(TOTAL: 20 marks)

- END OF PAPER -

Appendix 1

Selected Formulas

Chapter 3

Stockholders' equity = Paid-in capital + Retained earnings

Stockholders' equity = Total assets – Total liabilities

Net operating working capital (NOWC)
= Current assets – (Current liabilities – Notes payable)

Operating income (or EBIT) = Sales revenue – Operating costs

FCF = [EBIT (1 – T) + Depreciation] – [Capex + Increase in NOWC]

Chapter 4

Current ratio = $\frac{\text{Current assets}}{\text{Current liabilities}}$

Quick, or acid test, ratio = $\frac{\text{Current assets} - \text{Inventories}}{\text{Current liabilities}}$

Inventory turnover ratio = $\frac{\text{Sales}}{\text{Inventories}}$

Days, sales, outstanding (DSO) = $\frac{\text{Receivables}}{\text{Average sales per day}} = \frac{\text{Receivables}}{\text{Annual sales}/365}$

Fixed assets turnover ratio = $\frac{\text{Sales}}{\text{Net fixed assets}}$

Total assets turnover ratio = $\frac{\text{Sales}}{\text{Total assets}}$

Debt ratio = $\frac{\text{Total debt}}{\text{Total assets}}$

Debt-to-capital ratio = $\frac{\text{Total debt}}{\text{Total capital}} = \frac{\text{Debt}}{\text{Debt} + \text{Equity}}$

Debt-to-equity ratio = $\frac{\text{Total debt}}{\text{Total equity}} = \frac{\text{Debt}}{\text{Equity}}$

Times-interest-earned (TIE) ratio = $\frac{\text{EBIT}}{\text{Interest charges}}$

$\frac{D}{E} = \frac{D/A}{1 - D/A}$ and $\frac{D}{A} = \frac{D/E}{1 + D/E}$

Note: Appendix 1 continues on page 10

Appendix 1 (continued)

$$\text{Operating margin} = \frac{\text{Operating income (EBIT)}}{\text{Sales}}$$

$$\text{Profit margin} = \frac{\text{Net income}}{\text{Sales}}$$

$$\text{Return on total assets (ROA)} = \frac{\text{Net income}}{\text{Total assets}}$$

$$\text{Basic earning power (BEP)} = \frac{\text{EBIT}}{\text{Total assets}}$$

$$\text{Return on investors' capital (ROIC)} = \frac{\text{EBIT}(1-T)}{\text{Total capital}} = \frac{\text{EBIT}(1-T)}{\text{Debt} + \text{Equity}}$$

$$\text{Return on common equity (ROE)} = \frac{\text{Net income}}{\text{Common equity}}$$

$$\text{Price/Earnings (P/E) ratio} = \frac{\text{Price per share}}{\text{Earnings per share}}$$

$$\text{Book value per share} = \frac{\text{Common equity}}{\text{Shares outstanding}}$$

$$\text{Market/Book ratio (M/B)} = \frac{\text{Market price per share}}{\text{Book value per share}}$$

$$\begin{aligned} \text{ROE} &= \text{Profit margin} \times \text{Total assets turnover} \times \text{Equity multiplier} \\ &= \frac{\text{Net income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Total assets}} \times \frac{\text{Total assets}}{\text{Total common equity}} \end{aligned}$$

- END OF APPENDIX 1 -

BU8201 BUSINESS FINANCE

Please read the following instructions carefully:

- 1. Please do not turn over the question paper until you are told to do so. Disciplinary action may be taken against you if you do so.**
2. You are not allowed to leave the examination hall unless accompanied by an invigilator. You may raise your hand if you need to communicate with the invigilator.
3. Please write your Matriculation Number on the front of the answer book.
4. Please indicate clearly in the answer book (at the appropriate place) if you are continuing the answer to a question elsewhere in the book.