NANYANG TECHNOLOGICAL UNIVERSITY

SEMESTER 2 EXAMINATION 2013-2014

BU8201 – Business Finance

April 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) Which of the following statements is most CORRECT?
- (A) Limited Liability Proprietorship (LLP) has the limited liability advantage of a corporation but is taxed as a proprietorship.
- (B) To align the interest of the manager with those of the bondholders, managerial compensation should be based on stock's performance over the **long**-term.
- (C) To align the interest of the manager with those of the bondholders, managerial compensation should be based on stock's performance over the **short**-term.
- (D) Restrictions in the firm's ability to issue more bonds stipulated in the bond covenants are to protect the interest of the shareholders.
- (E) Typically, when a firm invests in a project with very high expected NPV accompanied with very high risk, the stockholders will tend to support this project while the bondholders will tend to reject it.

(2) Which of the following has the **least** impact on the stock's discount rate?
- (A) Return on asset of the firm.
- (B) Inflation premium.
- (C) Market risk premium.
- (D) Risk premium of the stock.
- (E) Real risk-free rate.

(3) Celiz Corp's 3-year bonds currently have a yield to maturity of 8.9%. The maturity risk premium (MRP) is estimated to be 0.3% (t - 1), where t is equal to the time to maturity. The default risk and liquidity premiums for this company's bonds total 2.1% and are believed to be the same for all bonds issued by this company. The real risk-free rate, r*, is assumed to be constant. The expected inflation rate is 1%, X% and 3% for Year 1, Year 2 and Year 3 respectively, and is 5% per year for the next 10 years. The 7-year Treasury security is currently 9.71428%. Disregard cross-product terms, i.e., if averaging is required, use the arithmetic average. The value of r* is closest to:
- (A) 3.5%
- (B) 3.8%
- (C) 4.2%
- (D) 4.8%
- (E) 5.2%

Note: Question No. 1 continues on page 3

Question 1 (continued)

(4) The yield of a 3-year Treasury security is 5.0% while the yield of a 12-year Treasury security is 7.9%. Based on Pure Expectations Hypothesis, the yield of a 5-year security starting 7 years from now is 8.0%. The yield of a 4-year security starting 3 years from now is closest to:

(A) 8.2%
(B) 10.0%
(C) 7.5%
(D) 10.8%
(E) 12.3%

(5) You plan to borrow $135,000 at a 7.5% annual interest rate. The terms require you to amortize the loan with 7 equal end-of-year payments. The interest component of the **third** payment is closest to:

(A) $17,754
(B) $16,615
(C) $8,973
(D) $7,734
(E) $40,500

(6) You invest $1,200,000 in a bank at a 3.0% nominal rate. The terms of the investment would require the bank to make 12 equal end-of-month payments per year for 5 years to you, and then make an additional final (balloon) payment of $400,000 at the end of the last month. The equal monthly payments to be made by the bank is closest to:

(A) $17,466.24
(B) $15,374.95
(C) $40,906.37
(D) $28,536.88
(E) $18,225.72

(7) Which of the following statements is <u>most</u> CORRECT?

(A) Callable bonds should have lower coupons than comparable bonds with no call feature.
(B) A longer bond should have higher Inflation Premium, as a longer time to maturity allows more time for inflation to increase substantially.
(C) The Realized Return of a bond will be higher than its expected yield to maturity (calculated at the time of bond purchase) if interest rate falls substantially during the holding period.
(D) The expected yield to maturity of a premium bond of a firm will always be lower than the expected yield to maturity of another bond issued by the firm, which has the same maturity but is trading at a discount to par. This is because the premium bond has a negative expected capital gains yield.
(E) The Realized Return of a bond will always be equal to its expected yield to maturity (calculated at the time of bond purchase).

Note: Question No. 1 continues on page 4

Question 1 (continued)

(8) For a typical firm, which of the following is most CORRECT? All rates are after taxes, and assume that the firm operates at its target capital structure, r_d is interest rate on the firm's new debt, r_s is component cost of common equity raised by retaining earnings, and r_e is component cost of common equity raised by issuing new common stock.

(A) $r_s > r_e >$ WACC $> r_d$.
(B) $r_e >$ WACC $> r_s > r_d$.
(C) $r_e > r_s >$ WACC $> r_d$.
(D) WACC $> r_e > r_s > r_d$.
(E) There is insufficient information to conclude about the relation between r_e, r_s, r_d and WACC.

(9) For the current year, Ethos Packaging estimates sales of $240,000, operating costs (other than depreciation) of $100,000 and its depreciation cost is $32,000. It has outstanding debt of $200,000 which incurs interest at a rate of 8%. Given that Echo's operating cash flow for the current year is $102,200, its corporate tax rate is closest to:

(A) 24%
(B) 30%
(C) 35%
(D) 38%
(E) 42%

(10) A portfolio consist of $600,000 of Stock A which has a beta of 0.8, $800,000 of Stock B which has a beta of X, and $200,000 of risk-free asset. Given that the beta of the portfolio is 1.05, the value of X is closest to:

(A) 1.5
(B) 1.3
(C) 1.7
(D) 1.0
(E) 0.9

(11) Creative Toys recently reported free cash flow of $8,400 and depreciation of $6,000. The company had no amortization charges and had $48,000 of bonds that carry a 7% interest rate. In order to sustain its operations and thus generate sales and cash flows in the future, the firm was required to make $9,600 of capital expenditures on new fixed assets and to invest $6,000 in net operating working capital. Its corporate tax rate was 40%. Its net income was closest to:

(A) $12,782
(B) $10,325
(C) $17,324
(D) $16,222
(E) $15,984

Note: Question No. 1 continues on page 5

Question 1 (continued)

(12) Which of the following statements concerning the principles underlying the capital budgeting process is **TRUE**?

(A) The net income for all the years of a project is essential for estimating the cash flows needed to make a correct capital budgeting decision.

(B) The cost of a feasibility study used to survey the market potential of a new product that has been already incurred, should **not** be included in the cash flow estimation when calculating the NPV of the project involving this new product.

(C) As interest expense is incorporated into the calculation of the Operating Cash Flow, the discount rate should not include the cost of debt.

(D) Discounted Payback method considers all cash flows throughout the entire life of a project.

(E) Cash flows are analyzed on a pre-tax basis as tax is only applied to the actual cash flows when the project is finally executed over the years of the project.

(13) Which of the following statements is **FALSE**?

(A) When investors become less risk averse, the slope of Security Market Line (SML) will decrease.

(B) When investors become less risk averse, on average, the price of stocks in the stock market will rise.

(C) A stock whose expected return falls below the SML cannot be purchased.

(D) A stock whose expected return lies above the SML is undervalued.

(E) The risk free rate defines where the SML intersects the Y-axis.

(14) At the beginning of the year, Lotte Boars announced at 7-for-4 stock split. The price of its share before the split was $30. After the split, the required return of the stock is 10% and its dividend grows constantly at the rate of Z% forever. The payout ratio is 60%. The expected earnings per share payable at the end of the current year (EPS_1) is $1.71429. The value of Z% is closest to:

(A) 3%

(B) 4%

(C) 5%

(D) 6%

(E) 7%

(15) Bond XYZ is an 8-year bond with a par value of $1,000. Its coupon rate is 6% and interest is payable annually. Michael buys Bond XYZ today when its price is $1,200. He holds this bond for one year and sells it when its yield to maturity is 15%. The Realized Return experienced by Michael over his 1-year holding period (rounded to nearest 0.1%) is closest to:

(A) 5.0%

(B) -47.9%

(C) -42.9%

(D) 23.4%

(E) None of the above.

Note: Question No. 1 continues on page 6

Question 1 (continued)

(16) Imagi Toys is an all-equity firm and currently has 100,000 shares. Its current earnings before interest and tax (EBIT) is estimated to be $200,000. It is embarking on a major capital structure exercise whereby it will issue debt of $500,000 to buy back its own shares. The interest rate on the debt is 8%. The share price before this recapitalization is $50. After the recapitalization, its earnings per share will be $1.4222. The corporate tax rate of Imagi Toys is closest to:
(A) 10%
(B) 15%
(C) 20%
(D) 25%
(E) 30%

(17) Project Profitazz has a WACC of 5% and a discounted payback period of 2.2751 years. The cash flows of Project Profitazz are given below, where Z is a positive number. The value of $Z, rounded to the nearest $10, is closest to:

Year	0	1	2	3	4
Cash Flow	-$12,000	$4,200	$Z	$10,000	$8,000

(A) $5,810
(B) $7,530
(C) $8,650
(D) $7120
(E) $6,200

(18) Fanzy Furniture is considering a project with an initial cost of $15,000 and cash flows of $3,000, $5,000, $8,000 and $16,000 at Year 1, Year 2, Year 3 and Year 4 respectively. The project's WACC is 7%. The Equivalent Annual Annuity (EAA) of this project, rounded to the nearest $10, is closest to:
(A) $3,220
(B) $2,580
(C) $3,470
(D) $3,000
(E) $2,800

Note: Question No. 1 continues on page 7

Question 1 (continued)

(19) The initial cash flow of Project Tessler is \$X (where X is **negative**). Tesslar has a WACC of 10%, MIRR of 11.907969% and cash flows as shown in the table below. The value of \$X (rounded to nearest \$100) is closest to:

Year	0	1	2	3	4
Cash flow	\$X	\$9,500	\$41,250	\$30,000	-\$16,000

(A) -\$30,000
(B) -\$40,000
(C) -\$50,000
(D) -\$60,000
(E) None of the above

(20) Which of the following statements is most CORRECT?

(A) NOWC (Net operating working capital) is funds needed to finance long term cash flows.
(B) NOWC calculates the amount of funds from non-interest payable sources of funds needed to carry or buy the current assets.
(C) Accumulated depreciation is added to NOPAT (Net operating profit after taxes) before arriving at the FCF (Free Cash Flow) as depreciation is a non-cash expense.
(D) CAPEX (Capital expenditure) is the difference between the current Gross Fixed Assets and the Gross Fixed Assets of the previous year.
(E) NOPAT is the "profits" available to shareholders only.

(TOTAL: 80 marks)

SECTION B

Question 2

(a) Bond ABC is an 8-year bond with a par value of $1,000. It pays interest annually, is currently trading at $1,193.8964, and its yield to maturity is 5%. This bond is callable after 3 years at $Y and its yield to call is 4.185919%. Calculate the value of $Y, rounded to the nearest $10.

(10 marks)

(b) TBD Printers does not have any preferred stock. Its debt-to-equity ratio is 2:3, and it has total assets of $100 million. For simplicity, assume that total assets equals to total capital. The market value of its debt is $40 million. For the current year, its earnings before tax is $5 million and the net income is $4 million. The risk free rate is 2% and the market risk premium is 5%. The unlevered beta of TBD stock is 0.978261 while the yield to maturity of its bonds is 6%. The Free Cash Flow for year 1 (FCF_1) is $6 million and the free cash flows are expected to grow at a constant rate of 3% forever. The current number of common stocks is 5 million shares.

(i) Calculate the required return of the stock of TBD.

(5 marks)

(ii) Using the Corporate Valuation model, calculate the Intrinsic Value of the shares of TBD (rounded to nearest $0.10).

(5 marks)

(TOTAL: 20 marks)

- END OF PAPER -

Appendix 1

Selected Formulas

Chapter 2

$$\text{Stockholders' equity} = \text{Paid-in capital} + \text{Retained earnings}$$

$$\text{Stockholders' equity} = \text{Total assets} - \text{Total liabilities}$$

$$\text{Net operating working capital (NOWC)} = \text{Current assets} - (\text{Current liabilities} - \text{Notes payable})$$

$$\text{Operating income (or EBIT)} = \text{Sales revenue} - \text{Operating costs}$$

$$\text{FCF} = [\text{EBIT}(1 - \text{T}) + \text{Depreciation}] - [\text{Capex} + \text{Increase in NOWC}]$$

Chapter 3

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

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

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

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

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

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

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

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

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

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

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

Note: Appendix 1 continues on page 10

Appendix 1 (continued)

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

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

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

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

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

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

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

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

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

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

- 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.