NANYANG TECHNOLOGICAL UNIVERSITY

SEMESTER 2 EXAMINATION 2014-2015

BU8201 – Business Finance

April 2015

Time Allowed: 2 hours

INSTRUCTIONS

1 This paper contains **TWO(2)** questions and comprises **NINE(9)** 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 concerning the principles underlying the capital budgeting process for a new project is **TRUE**?

(A) 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.

(B) The before-tax opportunity cost of the rental foregone when the new project uses an existing office premise should be added as a cost to the new project.

(C) In arriving at the operating cash flow, interest expense should not be deducted as financing effects have already been taken into accounting when discounting cash flows by the WACC.

(D) The after-tax opportunity cost of the rental foregone when the new project uses an existing office premise should not be added as a cost to the new project.

(E) The effect of negative substitutes (cannibalization) should result in positive cash flows to the new project.

(2) For the current year, Absolvus has free cash flows of $150,000 and depreciation of $90,000. Over the course of this year, it bought a building for $600,000. Its net operating working capital at the beginning and the end of the year is $170,000 and $320,000 respectively. It is subject to a corporate tax rate of 20% and has debt of $600,000 carrying an interest rate of 8% per year. The net income of Absolvus for the current year is closest to:

(A) $680.500

(B) $771,600

(C) $782,400

(D) $801,300

(E) $808,000

Note: Question No. 1 continues on page 3

Question 1 (continued)

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

(A) The following can be a correct formulation for maturity risk premium (MRP): MRP is zero for treasury securities with less than one year maturity and for those with maturities one year or longer, MRP follows the formula {0.15%(t) – 0.10} where t is the number of years to maturity.

(B) According to the pure expectations hypothesis, maturity risk premium can be positive but can never be negative.

(C) Because of default risk premium and liquidity premium, the corporate bond yield curve can never be downward sloping.

(D) Liquidity premium is lower for corporate bonds as the market for corporate bonds is less liquid than the market for treasury securities.

(E) If the pure expectations hypothesis holds, the Treasury bond yield curve can be upward or downward sloping but never humped (i.e. upward sloping followed by downward sloping).

(4) The yield of a 3-year Treasury security is 5% while the yield of a 5-year Treasury security starting 3 years from today is 8%. Assume that maturity risk premium is zero. If the default risk premium for an 8-year corporate bond is 2.5% while its liquidity premium is 1.3%, the yield of this 8-year corporate bond is closest to:

(A) 9.8%

(B) 10.2%

(C) 10.5%

(D) 10.7%

(E) 10.9%

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

(A) An investor should never buy a stock if the expected stock's intrinsic value at the end of the year is lower than the stock's intrinsic value today.

(B) The dividend yield of a stock is its required return less the capital gains yield.

(C) It is rational for an investor to buy a stock that pays negative dividend if the capital gains yield is sufficiently large to compensate for the effect of the negative dividend.

(D) The growth rate of dividends can never be negative.

(E) When a stock is overvalued, its expected return will be greater than its required return. Hence an investor should sell this stock.

Note: Question No. 1 continues on page 4

Question 1 (continued)

(6) Sustanto Ltd recently reported sales of \$670,000, \$302,000 of operating costs other than depreciation. The capital expenditure was \$140,800, the net fixed asset at the beginning of the year was \$100,000 while the net fixed asset at the end of the year was \$200,000. It paid a dividend of \$55,000. It had \$400,000 of outstanding bonds that carried a 6% annual interest rate, and its corporate tax rate was 30%. The value of its total asset was reported as \$4,100,000. The return on asset of Sustanto Ltd was closest to:

- (A) 4.71%
- (B) 4.82%
- (C) 4.95%
- (D) 5.02%
- (E) 5.18%

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

- (A) A possible reason for why a company's days sales outstanding (DSO) is higher than its industry average is that it gives 60 days credit for its sales while most of its peer companies give 30 days credit.
- (B) If a company's ROE is higher than industry average but its profit margin is below industry average, it must be that its total asset turnover is above industry average.
- (C) A higher times-interest-earned ratio is an indicator of financial health as it indicates that a company has more interest income to support any cash payments needed.
- (D) Statements (A) and (B) are correct.
- (E) Statements (A) and (C) are correct.

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

- (A) When an investor buys a 20-year bond when its yield to maturity is x%, and sells it 3 years later when its yield to maturity is (x + 5)%, the realized return on the bond investor over this 3-year investment period will be more than x%.
- (B) A callable bond is likely to have lower coupon rate than a similar bond which is not callable.
- (C) An investor would prefer a bond whose price is expected to fall but has a yield to maturity of 15%, to another bond whose price is expected to rise but has a yield to maturity of 14%.
- (D) A longer bond with lower coupon will tend to have less interest rate risk and higher reinvestment rate risk.
- (E) When an investor buys a 30-year discount bond, his realized capital gains over a 2-year investment period will always be positive no matter how interest rate changes during this 2-year period.

Note: Question No. 1 continues on page 5

Question 1 (continued)

(9) Which of the following statements is most CORRECT?
- (A) The earnings of a partnership are subject to double taxation.
- (B) A non-active partner in a partnership is not subject to unlimited liability as he does not actively take part in the management of the partnership.
- (C) It would not be advantageous to incorporate a business if its potential earnings are very high because setting it up as partnership will result in lower taxes.
- (D) Setting up a business as a corporation would lead to easier transfer of ownership but also result in higher cost of set-up and report filing.
- (E) Statements (C) and (D) are true.

(10) Which of the following statements is most CORRECT?
- (A) Beta of a stock is obtained by performing a cross sectional regression.
- (B) If a stock's expected return is below its required return, an investor should sell this stock.
- (C) The slope of the Security Market Line is the beta of a stock.
- (D) If risk free rate increases by 2%, the market risk premium will decrease by 2% as it is the difference between market return and the risk free rate.
- (E) When a stock is added to a portfolio, the portfolio's total risk is reduced only if the correlation of return between the new stock and the current portfolio is negative.

(11) Which of the following statements is most CORRECT?
- (A) Making it easier for outside investors to acquire sufficient shares to launch a hostile takeover will reduce potential conflict of interest between stockholders and managers.
- (B) Financing projects with debt, which has lower cost, will reduce the conflict of interest between stockholders and bondholders.
- (C) Investing in risky projects will help reduce conflict of interest between stockholders and bondholders, as these projects will lead to higher expected returns which will benefit both stockholders and bondholders.
- (D) Being socially responsible is inconsistent with shareholder wealth maximization.
- (E) Compensating managers with fixed cash salary will reduce the conflict between managers and bondholders as this form of compensation assures managers of their salary.

(12) The slope of the Security Market line is 9% and the intercept is 3%. A stock portfolio consists of $25,000 of Stock X which has a beta of 1.4, $40,000 of Stock Z, $30,000 of risk-free asset and $70,000 invested in the market portfolio. The required return of the portfolio is 10.42909%. The beta of Stock Z is closest to:
- (A) 1.32
- (B) 1.23
- (C) 0.95
- (D) 0.78
- (E) 0.67

Note: Question No. 1 continues on page 6

Question 1 (continued)

(13) Tatem Corp. expects to pay a dividend of $4 per share at the end of this year and the growth rate of dividend is expected to be -4% per year forever. Its current stock price is $25 per share. The market return is 9% and the risk free rate is 4%. The beta of Tatem's stock is closest to:
- (A) It is not possible to solve this question as growth rate of dividend cannot be negative.
- (B) 1.3
- (C) 1.4
- (D) 1.5
- (E) 1.6

(14) Shinney Printers is subject to a corporate tax rate of 30%. The unleveraged beta of Shinney's stock is 0.9. The risk-free rate is 2% while the market risk premium is 6%. The increase in cost of equity when Shinney changes from a debt-to-capital ratio of 1:5 to a debt-to-capital ratio of 2: 3 is closest to:
- (A) 6.62%
- (B) 7.53%
- (C) 8.62%
- (D) 8.88%
- (E) 8.95%

(15) Susan has $10,000 and invests in a special 10-year fund. This fund pays nominal return of 6%, compounded semi-annually for the first two years, nominal return of 8%, compounded quarterly for the next three years, and nominal return of 10%, compounded monthly for the last five years. The amount of money Susan is expected to receive at the end of ten years is closest to:
- (A) $22,533
- (B) $22,824
- (C) $23,000
- (D) $23,485
- (E) $23,622

(16) At the beginning of the year, Leonardo Mobile announced at 4-for-3 stock split. After the split, the required return of the stock is 12% and its dividend grows constantly at the rate of 4% forever. The payout ratio is 48%. The expected earnings per share payable at the end of the current year (EPS_1) is $5. The stock price before the split is closest to:
- (A) $40.00
- (B) $22.50
- (C) $42.30
- (D) $43.60
- (E) $45.10

Note: Question No. 1 continues on page 7

Question 1 (continued)

(17) Project Secreto has a WACC of 5% and cash flows as shown in the table below. Its MIRR is 8.14823%. Assuming Z is negative, the value of $Z (rounded to nearest $100) is closest to:

Year	0	1	2	3	4
Cash flow	-$20,000	$5,000	$10,000	$Z	$20,000

(A) -$6,500
(B) -$6,800
(C) -$7,100
(D) -$7,500
(E) -$8,000

(18) Investment A pays 20 quarterly payments of $500, the first payment being made at the end of the first quarter. Investment B pays 60 monthly payments of $250, with the first payment being made today. Considering the risk of Investment A, the appropriate required return should be a nominal rate of 10%, with quarterly compounding. Considering the risk of Investment B, the appropriate discount rate has an effective annual rate of 14%, interest being compounded monthly. The amount you would pay extra for Investment B compared to Investment A is closest to:
(A) $3,180
(B) $3,270
(C) $3,320
(D) $3,410
(E) $3,450

(19) Leisure Furniture is an all-equity firm and currently has Z number of shares. Its current earnings before interest and tax (EBIT) is estimated to be $300,000. It is embarking on a major capital structure exercise whereby it will issue debt of $600,000 to buy back its own shares, which are priced at $40 per share. The interest rate on the debt is 6%. After the recapitalization, its earnings per share will be $1.27111. The corporate tax rate applicable is 35%. Leisure's EBIT is not affected by this recapitalization. The value of Z is closest to:
(A) 90,000
(B) 110,000
(C) 130,000
(D) 150,000
(E) 165,000

Note: Question No. 1 continues on page 8

Question 1 (continued)

(20) Bond XYZ is a 10-year bond with a par value of $1,000. It pays interest annually and its coupon rate is 7%. It is callable after 4 years at $1,050 and its yield to call is 5%. The bond price today is closest to:

(A) $1,075
(B) $1,084
(C) $1,093
(D) $1,112
(E) $1.123

(TOTAL: 80 marks)

SECTION B

Question 2

(a) Euston Toys invests in a 2-year project with an initial cost of \$80,000 and cash flow of \$50,000 and \$Z at Year 1 and Year 2 respectively. The WACC of this project is 8% while its Net Present Value (NPV) is \$26,310.01. Calculate Z (rounded to nearest \$) and use the Replacement Chain Method to obtain the NPV of this project done twice (rounded to nearest \$), where the second project is done immediately after the first project.

(5 marks)

(b) Intellos Toys' stock price is \$4. The number of common stock outstanding is 60,000 shares. The market value of its debt is \$360,000. Intellos does not have any preferred stock. The free cash flow available at the end of the current year is FCF_1 and is expected to grow at 10% the following year and at 8% per year forever after the second year. Given that the WACC of Intellos is 12%, calculate the value of FCF_1 (rounded to the nearest \$).

(5 marks)

(c) Bond DEF has maturity of 20 years and a face value of \$1,000. It pays 8% coupon rate with quarterly payments and currently sells at a yield to maturity (YTM) of 12% per year.

(i) You purchase the bond, hold it for 6 years, and deposit the coupon income in a bank account paying quarterly interest at an effective annual rate of 9% per year. After holding the bond for 6 years, you sold it when its yield to maturity is 6% per year (at that time, Bond DEF has outstanding maturity of 14 years). Calculate the accumulated value arising from the coupon income that is available in the bank account at the end of the 6-year investment period, and the sale price of the bond at that time.

(5 marks)

(ii) What would be the effective annual rate (EAR) of the realized return of your investment over the 6-year period?

(5 marks)

(TOTAL: 20 marks)

- END OF PAPER -

Appendix 1

Selected Formulas

Chapter 3

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

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

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

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

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

Chapter 4

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

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

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

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

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

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

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

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

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

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

Note: Appendix 1 continues on page 11

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.