NANYANG TECHNOLOGICAL UNIVERSITY

SEMESTER 1 EXAMINATION 2015-2016

BU8201 – Business Finance

November 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 is most CORRECT?

(A) The crossover rate is the value of the weighted average cost of capital (WACC) used to discount cash flow so that the present value of inflows is equal to the present value of outflows.

(B) For all projects, Internal Rate of Return (IRR) would be greater than WACC whenever Net Present Value (NPV) of the project is positive.

(C) Financing effects should be factored in when calculating the weighted average cost of capital.

(D) Assuming that cash flows can be reinvested at the IRR is better than assuming they can be reinvested at the WACC as the IRR is the correct return of a project.

(E) The Modified IRR (MIRR) methodology discounts cash outflows at the IRR and compounds cash inflows at the WACC.

(2) For the current year, Forut Data has outstanding debt of $650,000 which incurs interest at a rate of 5% per year. Its corporate tax rate is 20%. It estimates operating costs (other than depreciation) of $300,000 and depreciation of $96,000. Given that Forut Data's operating cash flow for the current year is $355,200, what is its revenue for the current year (rounded to nearest $100)?

(A) $720,000
(B) $820,500
(C) $560,000
(D) $620,000
(E) $670,000

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

(A) If inflation is expected to drop over the next 20 years, the Treasury yield curve cannot be upward sloping.

(B) The difference between the corporate yield curve and the Treasury yield curve is due to the default risk premium and the maturity risk premium.

(C) According to the Pure Expectations Hypothesis, if interest rate is expected to increase initially and drops thereafter, the shape of the Treasury yield curve is likely to be humped.

(D) The second-hand car market is a liquid market as one can sell his car quickly when one drops the sale price significantly.

(E) Default risk premium is compensation only for non-payment of principal by the issuer of a bond.

Note: Question No. 1 continues on page 3

Question 1 (continued)

(4) Tellis Furniture's 5-year bonds currently yield 8.9%. The real risk-free rate, r*, is 2.5% and is assumed to be constant. The maturity risk premium (MRP) is estimated to be 0.2% (t - 1), where t is equal to the time to maturity. The sum of default risk premium and liquidity premium for this company's bonds is 1.5%, and is believed to be the same for all bonds issued by this company. If the average inflation rate is expected to be 6% for years 6, 7 and 8, what is the yield on a 8-year bond for Tellis Furniture closest to? Disregard cross-product terms, i.e., if averaging is required, use the arithmetic average.

(A) 10.2%
(B) 10.5%
(C) 10.9%
(D) 11.2%
(E) 11.5%

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

(A) An investor should never buy a bond if the expected bond price at the end of the year is lower than the bond price today.
(B) Two stocks, X and Y, have just paid the same amount of dividend per share. If Stock X experienced higher supernormal growth compared to stock Y for the same period of time, the intrinsic value of Stock X will be higher than the intrinsic value of Stock Y.
(C) The dividend payable by a company can never be negative while its free cash flow may be negative.
(D) An investor should never buy a stock if the expected stock price after one year is lower than the stock price today.
(E) Both (A) and (D) are correct.

(6) The following is data for Lucius Ltd: Gross Fixed Asset is $300,000, Accumulated Depreciation is $50,000, Cash is $50,000, Accounts Payable is $25,000, Accrued wages and taxes is $10,000 and Short-term borrowing is $60,000, Inventory is $135,000. Given that Lucius has a Current Ratio of 3, calculate its Quick Ratio.

(A) 1.25
(B) 1.43
(C) 1.58
(D) 1.67
(E) 1.83

Note: Question No. 1 continues on page 4

Question 1 (continued)

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

(A) An increase in reported net income will always lead to an increase in free cash flow.

(B) Other things held constant, a reduction in the inventory turnover ratio leads to an increase in ROE as the amount of funds that needs to be borrowed to buy the inventory is decreased.

(C) A decrease in inventories held leads to a decrease in the quick ratio, other things held constant.

(D) Other things held constant, if a firm decreases its sales while increasing its inventories, its inventory turnover ratio will decrease.

(E) Statements (B) and (D) are correct.

(8) Three $1,000 par value, 15-year, noncallable, bonds have the same amount of risk, hence their YTMs are equal. Bond AA has a 5% annual coupon, Bond BB has a 9% annual coupon, and Bond CC has a 13% annual coupon. Bond BB sells at par. Assuming that interest rates remain constant for the next 15 years, which of the following statements is most CORRECT?

(A) Over the next year, Bond AA's price is expected to decrease, Bond BB's price is expected to stay the same, and Bond CC's price is expected to decrease.

(B) Bond AA sells at a discount (its price is less than par), and its price is expected to increase over the next year.

(C) Bond AA's current yield will increase each year.

(D) Since the bonds have the same YTM, they should all have the same price, and since interest rates are not expected to change, their prices should all remain at their current levels until maturity.

(E) Bond CC sells at a discount (its price is less than par), and its price is expected to increase over the next year.

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

(A) When cash flows of a financial investment are paid semi-annually, but interests on such cash flows are calculated on a quarterly basis, the given cash flows should be compounded at the periodic rate for six-months to derive the future value of this investment.

(B) EAR is to be used to discount the periodic cash flows of an annuity with quarterly cash flows.

(C) If a bond with par value of $1,000 pays 6% semiannual coupon, bondholder will get $60 every half a year.

(D) Nominal Rate should be used for comparing investments with different compounding frequency.

(E) Statements (A) and (C) are true.

Note: Question No. 1 continues on page 5

Question 1 (continued)

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

(A) If you add enough randomly selected stocks to a portfolio, you can completely eliminate all the market risk from the portfolio.

(B) Historical beta of a specific stock is obtained by performing a time-series regression of this stock's return (dependent variable) against the market return (independent variable).

(C) The slope of the Security Market Line is the market return.

(D) When investors' risk aversion increases, the risk-free rate will increase.

(E) If investors' aversion to risk decreased, the risk premium on a high-beta stock would decrease by less than that on a low-beta stock.

(11) Michael has $X today to invest in a special 12-year fund and expects to receive $100,000 at the end of the 12-year period. This fund pays nominal return of 3%, compounded monthly for the first two years, nominal return of 5%, compounded quarterly for the next three years, and nominal return of 8%, compounded semi-annually for the last seven years. $X (rounded to nearest $100) is closest to:

(A) $44,800
(B) $45,200
(C) $46,900
(D) $49,400
(E) $49,700

(12) Stock Z is in equilibrium and is currently trading at $50. You buy Stock Z at the current price and expect to sell it at $54.50 after one year. Stock Z is a non-dividend paying stock. The risk-free rate is 3% while the beta of Stock Z is 1.40. The required market return is closest to:

(A) 4.29%
(B) 6.90%
(C) 7.29%
(D) 7.50%
(E) 7.80%

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

(A) Unexpected inflation should be factored in when computing the revenue of a project but there is no need to adjust the WACC of the project to account for the unexpected inflation.

(B) Change in Net Operating Working capital should be factored in both at the beginning and the end of a project.

(C) In calculating Operating Cash Flow, depreciation should be subtracted from EBIT (1 – Tax Rate), as depreciation is a non-cash expense.

(D) When calculating the cash flows of a replacement project, we should factor in the new depreciation (under the new project) and not the change in depreciation.

(E) Sunk cost should not be factored in when calculating cash flows of a new project as it is a non-cash expense.

Note: Question No. 1 continues on page 6

Question 1 (continued)

(14) The prevailing risk-free rate is 3% while the market return is 8%. Funfun Toys' cost of equity is 10% when its debt-to-capital ratio is 1:2. It is subject to a corporate tax rate of 40%. It changes its debt-to-capital ratio to 3:4 and at this debt level, the constant growth rate of dividend is 6%. What is the cost of **new** equity if it faces a flotation cost of 3% when issuing new common shares?

(A) 9.25%
(B) 10.50%
(C) 15.25%
(D) 15.54%
(E) 16.20%

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

(A) If we reward a firm's CEO by the size of the firm, this will help reduce the conflict of interest between stockholders and managers, especially in situations where the CEO can easily make decisions on acquisition of other companies.
(B) Financing projects with additional debt will increase the conflict of interest between managers and stockholders.
(C) Direct intervention by institutional shareholders will reduce the conflict between shareholders and bondholders.
(D) Targeted significant increase in a manager's compensation over the long-term will significantly reduce the conflict of interest between him and the shareholders.
(E) Including covenants in the bond agreement that restrict the amount of dividends a firm can pay will help reduce the conflict between bondholders and stockholders.

(16) TF's weighted average cost of capital is 8%, its end-of-year free cash flow (FCF_1) is expected to be $200,000, the FCFs are expected to grow at a constant rate of g% a year in the future and the number of its common stock outstanding is 100,000 shares. The market value of its debt is $4,500,000 and company's estimated intrinsic value per share of common stock is $55. The company does not have any preferred stock. Use the corporate valuation model to estimate the market value of g% (rounded to nearest 0.1%).

(A) 5.8%
(B) 6.0%
(C) 6.2%
(D) 7.0%
(E) 7.5%

Note: Question No. 1 continues on page 7

Question 1 (continued)

(17) Project Restaura has a WACC of 6% and cash flows as shown in the table below. Using the replacement chain method, calculate the NPV of Project Restaura done twice (rounded to nearest $10).

Year	0	1	2
Cash flow	-$18,000	$10,000	$25,000

(A) $27,370
(B) $28,320
(C) $33,150
(D) $26,130
(E) $25,860

(18) Tricis takes out a $250,000, 25-year mortgage today. The loan will be fully amortized over the next 25 years. Current mortgage rates are at a nominal rate of 6 percent per annum. Interest is compounded monthly and all payments are payable at the end of the month. Calculate the interest portion of the 73rd mortgage payment (rounded to nearest $10).
(A) $920
(B) $970
(C) $1,020
(D) $1,090
(E) None of the above

(19) Gervot's target capital structure is 30% debt, 10% preferred stock and 60% common stock. The company's preferred stock is selling at $20 and its required rate of return is 8% in the current market. It has annual coupon bonds outstanding at 7% coupon rate, but interest rates for bonds of similar risk are currently yielding 6% in the market. Gervot's tax rate is 40%. Currently, its common stock is traded at a price of $20 per share. The company is going to pay dividends of $1.20 per share ($D_1$) at the end of the current year. The perpetual common dividend growth rate is constant at 8%. Flotation costs have been estimated at 5% for common stock and 2% for preferred stock. What is Gervot's weighted average cost of capital (rounded to nearest 0.1%) if it has to issue new preferred stock and new common stock?
(A) 10.5%
(B) 10.8%
(C) 11.2%
(D) 11.4%
(E) None of the above

Note: Question No. 1 continues on page 8

Question 1 (continued)

(20) Westly Ltd. recently completed a 5-for-3 stock split. Following the stock split, the price of the company's stock is $88 and the firm's total market value of equity increases by 10%. What was its stock price prior to the split (rounded to nearest $)?

(A) $48
(B) $92
(C) $133
(D) $146
(E) $158

(TOTAL: 80 marks)

SECTION B

Question 2

(a) A 10-year, $1,000 par value bond with a 8% semiannual coupon has a nominal yield to maturity of 6.0%. The bond, which may be called after three years, has a nominal yield to call of 10.390493%. What is the bond's call price (rounded to the nearest $)?

(10 marks)

(b) Trenov Shoes has a 4-year project with an initial investment of $36,000. The cash flows for Year 1, Year 2, Year 3 and Year 4 are $12,600, $18,600, $30,000 and $Y respectively. Trenov's weighted average cost of capital is 6%.

(i) Given that the internal rate of return of this project is 39.46553%, calculate the value of $Y (rounded to nearest $10).

(6 marks)

(ii) Calculate the discounted payback of this project (rounded to the nearest 0.00 year).

(4 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

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

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

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

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

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

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

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

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

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

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

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

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.