NANYANG TECHNOLOGICAL UNIVERSITY

SEMESTER 1 EXAMINATION 2013-2014

BU8201 – Business Finance

November 2013

Time Allowed: 2 hours

INSTRUCTIONS

1 This paper contains **THREE(3)** 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 **THREE(3)** marks.

(1) Which of the following statements is most CORRECT?
- (A) One of the disadvantages of the partnership form of organization is that it leads to double taxation.
- (B) One of the advantages of a corporation from a social standpoint is that every stockholder has equal voting rights, i.e., "one person, one vote."
- (C) A corporation will cease when its founding shareholder passes away.
- (D) One of the disadvantages of a partnership is that a partner is exposed to unlimited liability.
- (E) To overcome the unlimited liability disadvantage of sole proprietorship, the business owner can register it as a Limited Liability Proprietorship (LLP).

(2) Which of the following statements is most CORRECT?
- (A) Direct intervention by institutional shareholders through voting is aimed to improve managers' alignment of interest with those of bondholders.
- (B) Stockholders are more worried about increases in use of debt compared to bondholders.
- (C) To align a manager's interest with those of bondholders, his compensation should be based on high profits made for the firm.
- (D) Bondholders protect themselves by limiting the issuance of new shares that a company can issue.
- (E) Relative to bondholders, stock holders are more likely to prefer riskier investments.

(3) Which of the following statements is most CORRECT?
- (A) The higher the maturity risk premium for bonds with longer maturities, the lower the probability that the yield curve will be positive.
- (B) Inverted yield curves can exist for Treasury bonds, but because of default risk premiums, the corporate yield curve cannot become inverted.
- (C) Even if the pure expectations theory is correct, there might at times be a humped Treasury yield curve.
- (D) The most likely explanation for a positive yield curve is that investors expect inflation to decrease in the future.
- (E) If the yield curve is positive, short-term bonds have higher yields than long-term bonds.

Note: Question No. 1 continues on page 3

Question 1 (continued)

(4) Transcot Inc.'s 5-year bonds currently have a yield-to-maturity of 8.2%. The real risk-free rate, r*, is 3.5% 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 default risk and liquidity premiums for this company's bonds total 1.2% and are believed to be the same for all bonds issued by this company. If the average inflation rate is expected to be 4% for years 6, 7, and 8, what is the yield on an 8-year bond for Transcot closest to? Disregard cross-product terms, i.e., if averaging is required, use the arithmetic average.

(A) 8.52%
(B) 8.95%
(C) 7.80%
(D) 9.29%
(E) 13.13%

(5) Tony recently obtained a 20-year, $400,000 mortgage with a 9% nominal interest rate. The mortgage is repaid in equal monthly installments. The remaining balance on the mortgage after four years (48 months of installments paid) is closest to:

(A) $350,200
(B) $341,800
(C) $365,600
(D) $320,500
(E) $311,200

(6) Susan has $100,000 to place on a 1-year fixed deposit which pays interest at a nominal rate of 12%, semi-annual basis. If she can reinvest the interest she will receive after half a year at a nominal rate of 16%, semi-annual basis, what is the actual amount she should get at the end of the 1-year period?

(A) $112,360.
(B) $112,480.
(C) $116,640.
(D) $115,500.
(E) None of the above.

(7) A 20-year bond has an annual coupon of 7%. The bond currently has a yield to maturity of 10%. Which of the following statements is most CORRECT?

(A) If market interest rates increase substantially, the bond price may fall below its current value one year later.
(B) Even if there is a default, bond price will reach par value at maturity.
(C) If market interest rates remain unchanged, the bond's price one year from now will be lower than it is today.
(D) The bond is currently selling at a price above its par value as interest rates have decreased from time of issue until today.
(E) If market interest rates increase, the price of the bond will also increase.

Note: Question No. 1 continues on page 4

Question 1 (continued)

(8) Today, Newsup has a 12% semiannual coupon bond which has outstanding maturity of 8 years. It has a par value of $1,000. The bond price is currently at $1,500. If interest rates remain the same, in two years' time, the price of this bond is closest to:

(A) $1,320.
(B) $1,280.
(C) $1,430.
(D) $1,390.
(E) None of the above.

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

(A) Beta is obtained using a time-series regression of a stock's return versus the market return.
(B) The slope of the security market line is equal to a stock's beta, and is obtained by performing a time-series regression.
(C) If the risk-free rate rises, then the market risk premium will also rise.
(D) If a company's beta doubles, then its required return will also double.
(E) None of the above.

(10) Given the following probability distribution of a stock's return, calculate its stand-alone risk.

Probability	Return
10%	3%
20%	5%
40%	8%
20%	11%
10%	13%

(A) 1.52%
(B) 1.95%
(C) 2.56%
(D) 2.93%
(E) 3.28%

Note: Question No. 1 continues on page 5

Question 1 (continued)

(11) Classica Furniture is developing its business plan. It will require $1,800,000 of assets, and it projects $1,305,000 of sales and $1,050,000 of operating costs for the first year. Classica is quite sure of these numbers because of contracts with its customers and suppliers. Assume zero depreciation and amortization cost. It can borrow at a rate of 7.5%, but the bank requires it to have a TIE of at least 4.0, and if the TIE falls below this level the bank will call in the loan and Classica will go bankrupt. What is the maximum debt ratio the firm can use? (Hint: Find the maximum dollars of interest, then the debt that produces that interest, and then the related debt ratio.)

(A) 45.1%
(B) 46.5%
(C) 47.2%
(D) 50.8%
(E) 52.9%

(12) Firms X and Y are identical except for their level of debt and the interest rates they pay on debt. Each has $4 million in assets, $800,000 of EBIT, and has a 40% tax rate. However, firm X has a debt-to-assets ratio of 50% and pays 12% interest on its debt, while Firm Y has a 30% debt ratio and pays only 10% interest on its debt. The difference between the two firms' ROEs is closest to:

(A) 2.23%
(B) 1.80%
(C) 3.52%
(D) 4.28%
(E) 4.52%

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

(A) An investor should never buy a stock if the constant growth rate of dividend is negative.
(B) An investor can buy a stock even if the constant growth rate of dividend is negative, if its dividend yield is positive.
(C) An investor should buy a stock that is undervalued as its required return is more than the expected return.
(D) An investor should sell a stock if its expected return is less than its required return.
(E) Stockholders appoint management which will elect the board of directors.

(14) Gloria Arts just paid a dividend of $3.00 ($D_0$). Gloria's growth rate is expected to be a constant 5% for 2 years, after which dividends are expected to grow at a rate of 10% forever. Gloria's required return on stock is 12%. The current price of Gloria's common stock is closest to:

(A) $82
(B) $91
(C) $95
(D) $150
(E) $165

Note: Question No. 1 continues on page 6

Question 1 (continued)

(15) Which of the following statements is most CORRECT?
- (A) There is an "opportunity cost" associated with using retained earnings as they are not "free."
- (B) The WACC as used in capital budgeting is an estimate of the cost of all the capital a company has raised to acquire its assets.
- (C) The WACC as used in capital budgeting will be the after-tax cost of new equity if the firm plans to use retained earnings to finance its capital budget during the coming year.
- (D) The WACC as used in capital budgeting will be the after-tax cost of debt, using the coupon rate of existing bonds as the cost of debt.
- (E) The WACC as used in capital budgeting is an estimate of a company's after-tax cost of capital and is the discount rate applied on dividends.

(16) Farana Tours is forecasting earnings per share (EPS) of \$3.00 this year on its 1,5000,000 shares of stock outstanding. The company's capital structure consists of debt and common stock. Its capital budget (money needed for new projects) for the upcoming year will be \$2,400,000. The company is also committed to maintaining its \$2.00 dividend per share (DPS), and it wants to avoid issuing new common stock. Given the above constraints, what portion of the capital budget will be funded with debt?
- (A) 25.6%
- (B) 37.5%
- (C) 33.5%
- (D) 29.4%
- (E) 55.2%

(17) Which of the following statements is most CORRECT?
- (A) For projects with non-normal cash flows, the use of MIRR alone is sufficient to decide whether the project is profitable.
- (B) For two projects, the one with the higher IRR is always considered the better or more profitable project.
- (C) One advantage of the discounted payback method over the payback method is that the discounted payback method takes into consideration cashflows beyond the discounted payback period.
- (D) For any given independent project, the NPV and IRR methods always lead to the same accept/reject decision.
- (E) For the MIRR method, the PV of Cost is obtained by discounting cash outflows at the MIRR rate.

Note: Question No. 1 continues on page 7

Question 1 (continued)

(18) Smilus Toys had $82,500 of outstanding bonds that carry an X% interest rate, and its federal-plus-state income tax rate was 35%. It recently reported $837,500 of sales, $377,500 of operating costs other than depreciation, and $51,000 of depreciation. The firm's net income was $261,962.20. The value of X is closest to:
- (A) 3.75
- (B) 7.25
- (C) 5.25
- (D) 8.75
- (E) 2.50

(19) Magneto Tech recently reported $1,000,000 of sales, $500,000 of operating costs other than depreciation, and $25,000 of depreciation. The company had no amortization charges, it had $2,000,000 of bonds that carry an 8% interest rate, and its federal-plus-state income tax rate was 40%. Magneto's Operating Cash Flow was closest to:
- (A) $214,000
- (B) $250,000
- (C) $275,000
- (D) $310,000
- (E) $325,000

(20) Which of the following statements is most CORRECT?
- (A) Catering Theory states that a company should increase dividends when dividend-paying shares are out of favor, to cater to those who believe in the "signaling" hypothesis.
- (B) If the "clientele effect" is correct, then for a company whose earnings fluctuate, a policy of paying a constant percentage of net income as dividends will probably maximize the stock price.
- (C) An increase in the stock price when a company decreases its dividend is consistent with Tax Preference Theory.
- (D) Stock repurchases make the most sense at times when a company believes that its stock is overvalued.
- (E) Firms with a small number of investment opportunities and a relatively large amount of cash tend to have below average dividend payout ratios.

(TOTAL: 60 marks)

SECTION B

Question 2

(a) Project ABC is a 3-year project which has an initial cost of \$10,000 and it generates \$5,000, \$X and \$12,000 in Year 1, 2 and 3 respectively. The NPV of this project done **twice** is \$16,682.01, while its WACC is 8%. Calculate the value of X.

(8 marks)

(b) Fastmobile's current share price is \$30. It announces a 5-for-3 stock split. After the split, the required return of the stock is 12% and its dividend grows constantly at the rate of 3%. The expected earnings per share payable at the end of the current year (EPS_1) is \$\$2.70. Calculate the value of the Retention Ratio.

(5 marks)

(c) Project Alpha has a WACC of 8% and cash flows as shown in the table below. Its MIRR is 10.95214%. Assuming Y is positive, calculate the value of Y (rounded to nearest 100).

Year	0	1	2	3	4
Cash flow	-\$100,000	\$19,000	\$82,500	\$Y	-\$30,000

(7 marks)

(TOTAL: 20 marks)

Question 3

(a) Bond T is a 10-year bond with a par value of $1,000. Its coupon rate is 10% and interest is payable semiannually. You buy Bond T today when its yield-to-maturity is 8%. You hold this bond for one year and sold it when its yield-to-maturity is 6%. Calculate the realized current yield and realized capital gains yield over your 1-year holding period.

(10 marks)

(b) GAC Company is considering a 3-year project. The corporate tax rate applicable is 20%. GAC has a target debt-to-equity ratio of 0.3 : 0.7, and has a weighted average cost of capital of 7.5%. The yield-to-maturity of its outstanding debt is 5% while the market return is 8%, and the risk free rate is 3%. GAC does not have any preferred stock.

This project has an initial equipment cost of $1,248,000. The project will not directly produce any sales but will reduce operating costs by $500,000 per year. The equipment is depreciated straight-line to a zero book value over the life of the project. At the end of the project, the equipment is expected to be sold for $100,000. The project will require an investment of $50,000 in extra inventory, which will be recovered at the end of the project.

Calculate the **unlevered** beta of GAC's stock and the **NPV** of this 3-year project.

(10 marks)

(TOTAL: 20 marks)

- END OF PAPER -

Appendix 1

Selected Formulas

Chapter 2

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

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

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 3

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

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

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

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

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

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

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

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

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

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

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

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.