

NANYANG TECHNOLOGICAL UNIVERSITY

SPECIAL TERM II EXAMINATION 2015-2016

BU8201 – Business Finance

July 2016

Time Allowed: 2 hours

INSTRUCTIONS

- 1 This paper contains **FOUR(4)** questions and comprises **SIX(6)** pages and **ONE(1)** Appendix 1 of **FIVE(5)** pages.
 - 2 Answer **ALL** questions.
 - 3 The number of marks allocated is shown at the end of each question.
 - 4 Write all your answers to the multiple-choice questions in Question 1 of **Section A** on the same page in your answer book.
 - 5 Begin your answer to each question in **Section B** on a separate page of the answer book.
 - 6 Answers to the questions in **Section B** will be graded for content and appropriate presentation.
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Section A

Question 1

This question consists of **TEN(10)** multiple-choice questions. Choose only one correct answer from the given choices (A), (B), (C), (D) and (E). Write all answers of this question on the same page in your answer book. Each multiple-choice question carries **three(3)** marks.

1. Stock X and Stock Y both have an expected return of 10% (the two stocks are not in equilibrium), and both are paying dividend of \$1 per share in the coming year. Which of the following statements is most correct?
 - (A) Both stocks must have the same dividend growth rate.
 - (B) Both stocks must have the same beta.
 - (C) Both stocks must have the same dividend yield.
 - (D) Both stocks must have the same capital gains yield.
 - (E) None of the statements above is correct.

Note: Question No. 1 continues on page 2

Question 1 (continued)

- (2) Which of the following statements is most correct?
- (A) Issuing callable bonds is more risky to the company compared to issuing non-callable bonds.
 - (B) All else equal, investing in bonds with sinking fund is more risky compared to investing in bonds without sinking fund.
 - (C) All else equal, a callable bond will have higher coupon rate compared to a non-callable bond.
 - (D) All else equal, bonds with sinking fund are likely to have higher coupon rate than bonds without sinking fund.
 - (E) Callable bonds and bonds with sinking fund have the same risks, as they both allow the company to buy back the bonds if it chooses to.
- (3) Which of the following statements is most correct?
- (A) Corporate Valuation Model is only suitable for companies that do not pay dividends, and cannot be used for companies that pay dividends.
 - (B) Constant dividend growth model is not suitable if the cost of equity is less than the perpetual dividend growth rate.
 - (C) Stock analysts applying the same valuation method on the same stock will usually arrive at the same or similar stock value.
 - (D) The cost of equity is used as the discount rate in both the Dividend Discount Model and the Corporate Valuation Model.
 - (E) Dividend Discount Model and Corporate Valuation Model would usually arrive at the same or similar stock value.
- (4) Which of the following statements is most correct?
- (A) A project with higher IRR would produce a higher NPV compared to a project with lower IRR.
 - (B) For independent projects with normal cash flows, the IRR method will always arrive at the same accept/reject decision as the NPV method.
 - (C) A project's IRR should be compared to the WACC of the company to arrive at the accept/reject decision, regardless of the risk of the project compared to that of the company.
 - (D) The MIRR of a project will always be lower than the IRR of the project.
 - (E) None of the above statements is correct.
- (5) Which one of the following statements is most correct?
- (A) It is not possible for a stock's required return to be lower than the risk-free rate.
 - (B) It is common for a stock's actual or realized return to be different from its expected return and its required return.

Note: Question No. 1 continues on page 3

Question 1 (continued)

- (C) A stock with zero beta is preferred compared to a stock with a negative beta, because the former is less risky.
 - (D) If two stocks have the same beta, then their returns will also have the same correlation with the returns of the market.
 - (E) A stock with beta of 0.8 will move by the same quantum as another stock with beta of -0.8, and hence they have the same market risk.
- (6) A 20-year bond was issued 5 years ago at par value of \$1,000. The bond has semiannual coupon of 6%, and its current market price is \$920. Given this, which of the following statements is most correct?
- (A) The YTM for this bond is higher than 6%.
 - (B) The bond value will reach \$1,000 in 15 years if there is no default.
 - (C) If interest rate for this bond remains unchanged at its current level, the bond price will appreciate every year till maturity.
 - (D) Only (A) and (B) are correct.
 - (E) (A), (B) and (C) are correct.
- (7) If Stock A has a beta of 2 and Stock B has a beta of -2, which of the following is most correct?
- (A) If Stock A's required return is 12%, the Stock B's required return will be -12%.
 - (B) The standard deviation of Stock A's returns will be the same as that of Stock B.
 - (C) The market price of Stock A and Stock B in any year will always move in opposite direction.
 - (D) The price of both stocks will fluctuate by the same dollar amount, except that they fluctuate in opposite direction.
 - (E) None of the above statements is correct.
- (8) Which one of the following statements is most correct?
- (A) The NPV and MIRR methods will always lead to the same choice when analyzing two mutually exclusive projects.
 - (B) MIRR is better than IRR because it is easier to compute and its assumed reinvestment rate is more realistic.
 - (C) The NPV method is always better and more convenient than the IRR method when used to analyze independent or mutually exclusive projects.
 - (D) If a project's IRR is less than the WACC, its MIRR will be higher than its IRR.
 - (E) The discounted payback period could be shorter than the payback period under some circumstances, even if the discount rate remains positive.

Note: Question No. 1 continues on page 4

Question 1 (continued)

- (9) Which one of the following should **NOT** be included in the capital budgeting analysis for a new product?
- (A) The sale of the new product will cause some customers to switch from one of the company's existing products.
(B) The project will have to occupy the space that the company is currently generating rental income.
(C) The company has spent \$200,000 on collection of market data relating to the demand of the new product.
(D) A competing product produced by a competitor that may affect the sales of the new product.
(E) The new product will stimulate sales of some of the company's other products.
- (10) Which of the following statements is most **INCORRECT**?
- (A) Stock repurchases can be used by a company to distribute cash to its shareholders, and also as a means to change its capital structure.
(B) Stock repurchases can be used to distribute large one-time cash generated by the company in a particular year (such as sale of a business division) without having to increase its regular dividend.
(C) Stock repurchases do not force shareholders to sell their shares but allow them to decide whether or not to receive the distribution.
(D) Stock repurchases would generally cause shareholders to pay more tax than distribution through cash dividends, because shareholders tend to achieve higher gains in stock repurchases.
(E) Stock repurchases will cause the equity and the number of shares of the company to be reduced.

(TOTAL: 30 marks)

Section B

Question 2

- (a) You take up a 25-year \$600,000 housing loan from a bank with nominal loan interest rate of 6% per annum. For the monthly payments, the bank has agreed to your request to pay only interest portion of the loan for the first 5 years, and monthly amortized payment will then be made for the remaining 20 years of the loan. How much total dollar interest would you have paid for the entire loan period?

(5 marks)

Note: Question No. 2 continues on page 5

Question 2 (continued)

- (b) A company achieved a free cash flow of \$10 million last year. For the next 3 years, the company expects the free cash flow to double every year, before growing at a perpetual rate of 5% annually. The company's cost of equity is 14% and its weighted average cost of capital is 10%. The company has issued a total of 20 million common shares. It has total debt with market value of \$500 million, and has no preferred stock. Based on the above information, what is the estimated intrinsic value of this stock? (5 marks)
- (c) A firm has outstanding callable bonds with current market price of \$1,020. If the company wishes, the bonds can be called at the end of Year 6 at a call price of \$1,080. The bonds have 6% annual coupon rate and coupons are paid semiannually. They also have par value of \$1,000 and still have 10 years to maturity if they are not called. Determine (with appropriate calculations) whether the company is likely to call the bonds, if market interest rates continue to remain unchanged. (5 marks)
- (d) A 6-year project has an investment cost at Year 0, and cash inflows of \$1.5 million per year for the next 6 years. The appropriate discount rate for the project is 10%. The project's discounted payback is 2.8 years. Compute the MIRR of this project. (5 marks)

(TOTAL: 20 marks)

Question 3

You plan to invest \$1,000 at the end of every month in an investment account, which is expected to generate an annual return of 8%, compounded monthly. At the end of the first year, however, you plan to withdraw \$3,000 from the investment account to spend on year-end holiday trip. For subsequent years, although your monthly deposits would remain at \$1,000, your annual year-end withdrawal amount will increase by 10% every year to account for higher overseas vacation costs.

- (a) How much will you have in your investment account at the end of the first year (after the year-end withdrawal)? (6 marks)
- (b) How much will you have in your investment account at the end of 5 years? (9 marks)

Note: Question No. 3 continues on page 6

Question 3 (continued)

- (c) To have enough money to make the down payment for an apartment, you want to have a balance of \$100,000 in your investment account by the end of 5 years (after making the final year-end withdrawal for that year). To achieve this, instead of investing \$1,000 at the end of every month in the investment account, how much must your monthly investment be?

(10 marks)

(TOTAL: 25 marks)

Question 4

Reziz Corporation is considering investing in one of the two production systems to manufacture its new product. The following are the details of the two systems:

System A

Investment cost: \$2,000,000

Useful life: 5 years

Annual maintenance cost: \$100,000

Depreciation: Equal annual depreciation over 5 years

Salvage value: \$50,000

System B

Investment cost: \$2,800,000

Useful life: 8 years

Annual maintenance cost: \$40,000

Depreciation: Equal annual depreciation over 8 years

Salvage value: \$120,000

Reziz's equity beta is 1.3. The market return is 13% and the risk-free rate is 4%. Its semiannual-coupon bonds with annual coupon rate of 10.6% are trading at \$1,120 (with par value of \$1,000). The bonds have 8 years to maturity. The company's target capital structure is 50% equity and 50% debt. The applicable tax rate is 35%.

- (a) What is the weighted average cost of capital of Reziz Corporation?

(5 marks)

- (b) If the production systems are not intended to be repeated at the end of their useful lives, which production system should Reziz choose?

(10 marks)

- (c) If Reziz intends to repeat indefinitely the chosen system at the end of its useful life, which production system should it choose?

(10 marks)

(TOTAL: 25 marks)

- END OF PAPER -

Appendix 1

Selected Formulas

Chapter 3

Stockholders' equity = Total assets – Total liabilities

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

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

FCF = [EBIT(1-T) + Depreciation] – (Capital expenditures + ΔNet operating working capital)

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

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

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

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

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

Note: Appendix 1 continues on page 8

Appendix 1 (continued)

$$\text{Basic Earning Power (BEP)} = \frac{\text{EBIT}}{\text{Total assets}}$$

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

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

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

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

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

Chapter 5

$$\text{Future value} = FV_N = PV(1 + I)^N$$

$$\text{Present value} = PV = \frac{FV_N}{(1 + I)^N}$$

$$FVA_N = PMT(1+I)^{N-1} + PMT(1+I)^{N-2} + PMT(1+I)^{N-3} + \dots + PMT(1+I)^0 = PMT \left[\frac{(1+I)^N - 1}{I} \right]$$

$$FVA_{\text{due}} = FVA_{\text{ordinary}} (1 + I)$$

$$PVA_N = \frac{PMT}{(1+I)^1} + \frac{PMT}{(1+I)^2} + \dots + \frac{PMT}{(1+I)^N} = PMT \left[\frac{1 - \frac{1}{(1+I)^N}}{I} \right]$$

$$PVA_{\text{due}} = PVA_{\text{ordinary}} (1 + I)$$

$$\text{PV of a perpetuity} = \frac{PMT}{I}$$

$$PV = \frac{CF_1}{(1+I)^1} + \frac{CF_2}{(1+I)^2} + \dots + \frac{CF_N}{(1+I)^N} = \sum_{t=1}^N \frac{CF_t}{(1+I)^t}$$

Note: Appendix 1 continues on page 9

Appendix 1 (continued)

$$\text{Periodic rate } (I_{\text{PER}}) = \frac{\text{Stated annual rate}}{\text{Number of payments per year}} = \frac{I}{M}$$

$$\text{Effective annual rate } (\text{EFF}\%) = \left(1 + \frac{I_{\text{NOM}}}{M}\right)^M - 1.0$$

Chapter 7

$$\begin{aligned} \text{Quoted interest rate } (r) &= r^* + \text{IP} + \text{DRP} + \text{LP} + \text{MRP} \\ &= r_{\text{RF}} + \text{DRP} + \text{LP} + \text{MRP} \end{aligned}$$

Chapter 8

$$\text{Expected rate of return } (\hat{r}) = P_1 r_1 + P_2 r_2 + \dots + P_N r_N = \sum_{i=1}^N P_i r_i$$

$$\text{Standard deviation} = \sigma = \sqrt{\sum_{i=1}^N (r_i - \hat{r})^2 P_i}$$

$$\text{Coefficient of variation} = \text{CV} = \frac{\sigma}{\hat{r}}$$

$$\hat{r}_p = w_1 \hat{r}_1 + w_2 \hat{r}_2 + \dots + w_N \hat{r}_N = \sum_{i=1}^N w_i \hat{r}_i$$

$$b_p = w_1 b_1 + w_2 b_2 + \dots + w_N b_N = \sum_{i=1}^N w_i b_i$$

$$r_i = r_{\text{RF}} + (r_M - r_{\text{RF}}) b_i$$

Chapter 9

$$\begin{aligned} \text{Bond's value } (V_B) &= \frac{\text{INT}}{(1+r_d)^1} + \frac{\text{INT}}{(1+r_d)^2} + \dots + \frac{\text{INT}}{(1+r_d)^N} + \frac{M}{(1+r_d)^N} \\ &= \sum_{t=1}^N \frac{\text{INT}}{(1+r_d)^t} + \frac{M}{(1+r_d)^N} \end{aligned}$$

$$\text{Price of semiannual-coupon bond } (V_B) = \sum_{t=1}^{2N} \frac{\text{INT}/2}{(1+r_d/2)^t} + \frac{M}{(1+r_d/2)^{2N}}$$

$$\text{Value of stock } (\hat{P}_0) = \text{PV of expected future dividends}$$

$$\begin{aligned} &= \frac{D_1}{(1+r_s)^1} + \frac{D_2}{(1+r_s)^2} + \dots + \frac{D_\infty}{(1+r_s)^\infty} \\ &= \sum_{t=1}^{\infty} \frac{D_t}{(1+r_s)^t} \end{aligned}$$

Note: Appendix 1 continues on page 10

Appendix 1 (continued)

Chapter 10

$$\begin{aligned}\text{Constant growth stock: } \hat{P}_0 &= \frac{D_0(1+g)^1}{(1+r_s)^1} + \frac{D_0(1+g)^2}{(1+r_s)^2} + \dots + \frac{D_0(1+g)^\infty}{(1+r_s)^\infty} \\ &= \frac{D_0(1+g)}{r_s - g} = \frac{D_1}{r_s - g}\end{aligned}$$

$$\text{Expected rate of return} = \text{Expected dividend yield} + \text{Expected growth rate, or capital gains yield}$$

$$\hat{r}_s = \frac{D_1}{P_0} + g$$

$$\text{Growth rate} = (1 - \text{Payout ratio}) \text{ROE}$$

$$\text{Return on common equity (ROE)} = \text{Net Income}/\text{Common Equity}$$

$$\text{Payout ratio} = \text{Dividends}/\text{Net Income}$$

$$\text{Retention ratio} = 1 - \text{Payout ratio}$$

$$\text{Zero growth stock: } \hat{P}_0 = \frac{D}{r_s}$$

$$\text{Horizon value} = \hat{P}_N = \frac{D_{N+1}}{r_s - g}$$

$$\begin{aligned}\text{Nonconstant growth stock: } \hat{P}_0 &= \frac{D_1}{(1+r_s)^1} + \frac{D_2}{(1+r_s)^2} + \dots + \frac{D_N}{(1+r_s)^N} + \frac{D_{N+1}}{(1+r_s)^{N+1}} + \dots + \frac{D_\infty}{(1+r_s)^\infty} \\ &= \frac{D_1}{(1+r_s)^1} + \frac{D_2}{(1+r_s)^2} + \dots + \frac{D_N}{(1+r_s)^N} + \frac{\hat{P}_N}{(1+r_s)^N} \\ &= \text{PV of nonconstant dividends} + \text{PV of horizon value, } \hat{P}_N\end{aligned}$$

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

$$V_p = \frac{D_p}{r_p} \quad \hat{r}_p = \frac{D_p}{V_p}$$

Chapter 11

$$\text{WACC} = w_d r_d (1 - T) + w_p r_p + w_c r_s$$

$$\text{After-tax cost of debt} = r_d (1 - T)$$

$$\text{Component cost of preferred stock} = r_p = \frac{D_p}{P_p}$$

Note: Appendix 1 continues on page 11

Appendix 1 (continued)

$$r_s = r_{RF} + (r_M - r_{RF})b_i$$

$$r_s = \hat{r}_s = \frac{D_1}{P_0} + \text{Expected } g$$

$$\text{Cost of equity from new stock} = r_e = \frac{D_1}{P_0(1-F)} + g$$

Chapter 12

$$NPV = CF_0 + \frac{CF_1}{(1+r)^1} + \frac{CF_2}{(1+r)^2} + \dots + \frac{CF_N}{(1+r)^N} = \sum_{t=0}^N \frac{CF_t}{(1+r)^t}$$

$$\begin{aligned} IRR: CF_0 + \frac{CF_1}{(1+IRR)^1} + \frac{CF_2}{(1+IRR)^2} + \dots + \frac{CF_N}{(1+IRR)^N} &= 0 \\ \sum_{t=0}^N \frac{CF_t}{(1+IRR)^t} &= 0 \end{aligned}$$

$$\begin{aligned} MIRR: \sum_{t=0}^N \frac{COF_t}{(1+r)^t} &= \frac{\sum_{t=0}^N CIF_t (1+r)^{N-t}}{(1+MIRR)^N} \\ PV \text{ costs} &= \frac{TV}{(1+MIRR)^N} \end{aligned}$$

Chapter 13

$$\text{Operating cash flows} = EBIT(1-T) + \text{Depreciation \& Amortization}$$

$$\text{Tax paid on salvaged assets} = (\text{Tax rate})(\text{Salvage value} - \text{Book value})$$

Chapter 15

$$b_L = b_U [1 + (1-T)(D/E)]$$

- END OF APPENDIX 1 -

NANYANG TECHNOLOGICAL UNIVERSITY

SPECIAL TERM I EXAMINATION 2015-2016

BU8201 – Business Finance

June 2016

Time Allowed: 2 hours

INSTRUCTIONS

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Section A

Question 1

This question consists of TEN(10) multiple-choice questions. Choose only one correct answer from the given choices (A), (B), (C), (D) and (E). Write all answers of this question on the same page in your answer book. Each multiple-choice question carries three(3) marks.

1. Stock X has a required return of 10%, while Stock Y has a required return of 12%. Which of the following statements is most correct?
 - (A) Stock Y must have a higher dividend yield than Stock X.
 - (B) If Stock Y and Stock X have the same dividend yield, then Stock Y must have a lower expected capital gains yield than Stock X.
 - (C) If Stock X and Stock Y have the same current dividend and the same expected dividend growth rate, then Stock Y must sell for a higher price.
 - (D) All of the statements above are correct.

Note: Question No. 1 continues on page 2

Question 1 (continued)

- (E) None of the statements above is correct.
- (2) If inflation is expected to decrease and investors are becoming more risk averse, how will the Security Market Line (SML) be affected?
- (A) SML is likely to shift upwards and its slope is likely to be less steep.
(B) SML is likely to shift downwards and its slope is likely to be less steep.
(C) SML is likely to shift upwards and its slope is likely to be more steep.
(D) SML is likely to shift downwards and its slope is likely to be more steep.
(E) SML is likely to remain unchanged if the decrease in inflation offsets the increase in risk-aversion.
- (3) Which of following statements is most correct?
- (A) Two bonds having the same risk should yield the same nominal YTM for bond investors.
(B) A zero-coupon bond will not have a market price above its par value.
(C) A discount bond is always a better investment compared to a premium bond.
(D) All else equal, a callable bond will have lower coupon rate compared to a non-callable bond.
(E) All else equal, a bond with sinking fund will have higher coupon rate compared to a bond with no sinking fund provision.
- (4) Which of the following statements is most correct?
- (A) Projects with positive IRR should be accepted since they offer positive returns.
(B) A project with multiple IRRs should be accepted so long as all of the IRRs exceed the cost of capital.
(C) A project with multiple IRRs should be accepted as long as one of the IRRs exceeds the cost of capital.
(D) Only statements A and B are correct.
(E) None of the above statements is correct.
- (5) Which one of the following statements is most correct?
- (A) It is not possible to have negative beta for a stock, because such a stock will have negative required return.
(B) A stock's returns which are negatively correlated to the returns of most other stocks will have negative beta.
(C) A stock's returns can be negatively correlated to the returns of the market, and yet have positive beta.

Note: Question No. 1 continues on page 3

Question 1 (continued)

- (D) It is better to choose a low-beta stock compared to a high-beta stock, because the former is less risky.
- (E) Beta of a stock is determined only by the standard deviation of the stock's returns relative to that of the market.
- (6) A company is planning to issue bonds with 8%, semiannual coupon, with par value of \$1,000. The bonds will mature in 15 years and will be issued at par. Given this, which of the following statements is most correct?
- (A) The bonds will become premium bonds if the market interest rate for the bonds increases.
- (B) The bonds will pay ten coupon payments of \$80 each.
- (C) The bonds will sell at a premium if the market rate is 6%.
- (D) One year later, each bond will be worth \$1,040 if market interest rate for the bonds remains unchanged.
- (E) The final payment for every bond on maturity date will be \$1,080.
- (7) Which of the following statements regarding CAPM is most correct?
- (A) It is only applicable if all investors hold diversified portfolios.
- (B) The higher the beta of a stock, the higher is the expected return.
- (C) Stocks' actual returns are linearly related to their respective betas.
- (D) A stock's beta is usually computed by regressing its past returns against the returns of the market.
- (E) The beta of the market portfolio may change if economic conditions change.
- (8) Which one of the following statements is most correct?
- (A) The NPV method is considered the most superior method in capital budgeting and this is true under all situations.
- (B) A project has normal cash flow with investment at Year 0. If the IRR of the project exceeds the cost of capital (the appropriate discount rate for the project), it does not necessarily imply that the project's NPV would be positive.
- (C) For two independent projects, we should examine the crossover rate before making decision to accept or reject the projects.
- (D) When the IRR of a project is equal to the cost of capital, then the project's MIRR would be the same as its IRR.
- (E) In practice, the payback method is not useful since it ignores time value of money.

Note: Question No. 1 continues on page 4

Question 1 (continued)

- (9) Which one of the following statements regarding cash flows estimation in capital budgeting is most correct?
- (A) If the project is expected to make losses in certain years, then no corporate tax effects should be considered in those years.
(B) Interest costs should be treated as cash outflows if the company plans to borrow funds to finance the project.
(C) There should be no tax on salvage if the fixed assets are sold at their book values at the end of the project.
(D) Externalities must be considered, but only if it reduces the cash flows of the project.
(E) If the project utilizes unused valuable assets (such as building and equipment) that are already owned by the company, then no cash outflows relating to those assets need to be estimated.
- (10) Which one of the following statements is most **INCORRECT**?
- (A) Dividend policy would generally affect stock price even though there are many listed companies who do not pay dividends and yet have valuable stock price.
(B) Share repurchases would generally have tax advantages to shareholders who sell shares in the process.
(C) If shareholders forego dividends, they will be able to enjoy higher capital gains for the stock.
(D) Even when a company makes a significant loss in a year, it can still decide to pay dividend in that year.
(E) Companies must balance between paying too little or too much dividend. The objective is to adopt a dividend policy that maximizes shareholders' wealth.

(TOTAL: 30 marks)

Section B

Question 2

- (a) You take up a 20-year housing loan of \$500,000 from a bank with nominal loan interest rate of 5% per annum. For the end-of-month installments, the bank has agreed to your request to pay only \$3,000 per month in the first 10 years, and \$4,000 per month in the subsequent 10 years. Any remaining principal at the end of 20 years will be then be repaid in one single payment. What will be the remaining principal immediately after you have paid the last installment at the end of 20 years?

(5 marks)

Note: Question No. 2 continues on page 5

Question 2 (continued)

- (b) Due to cash flow constraints, a company has decided to pay dividend of \$1 per share every 4 years (first payment will be made 4 years from now), instead of paying dividend of \$0.25 every year. The proposed pattern of dividend payment is expected to continue perpetually. The stock has a beta of 1.5. Risk-free rate is 3% and the market return is 10%. What is the estimated value of this stock?

(5 marks)

- (c) A firm issues two types of bonds: zero-bond bonds and 6% semiannual coupon bonds. Both bonds have maturity of 10 years. The zero-coupon bonds have par value of \$2,000, whereas the semiannual coupon bonds have par value of \$1,000. If the semiannual coupon bonds are each issued at \$900, what should be issue price for each of the zero-coupon bonds?

(5 marks)

- (d) A 10-year project has an investment cost at Year 0, and cash inflows of \$2 million per year for the first 5 years, and cash inflows of \$3 million per year for the subsequent 5 years. The appropriate discount rate for the project is 12%, and the project's MIRR is 18%. What is the investment cost of this project?

(5 marks)

(TOTAL: 20 marks)

Question 3

James is 25 years old today, 1 January, and he is embarking on a savings-and-investment plan for his retirement. Every year, he will first deposit \$200 at the end of every month in his bank account, and at the end of the year, he will transfer all the money in the savings account, including interest earned, to an investment account (in order to fulfill the minimum annual investment sum required for the investment account). The bank account will earn a nominal interest rate of 3%, compounded monthly, and the investment account is expected to earn 8% annual return, compounded monthly.

- (a) How much will James have in his bank account at the end of the first year?
(6 marks)

- (b) If James plans to retire when he turns 65 years old, how much will he have in his investment account for retirement?
(7 marks)

Note: Question No. 3 continues on page 6

Question 3 (continued)

- (c) If James wishes to be able to make monthly withdraw of \$8,000 from his investment account for 20 years in his retirement, with the first withdrawal being made on the day he turns 65 years old, instead of depositing \$200 every month, how much must the monthly deposit be under his savings-and investment plan?

(12 marks)

(TOTAL: 25 marks)

Question 4

Detergent manufacturer Garren Corporation has just spent \$100,000 on a market study for its new cleaning product, Graze. The company is now considering investing \$5 million in fixed assets in a 5-year project to launch Graze in the market. The assets will be depreciated equally over 4 years. An investment of \$100,000 in net operating working capital is required at the start of the project, but is expected to be fully recovered when the project ends. Annual sales of Graze is expected to be \$3 million per year. Annual operating cost (excluding depreciation cost) is expected to be 50% of sales. Salvage value of the invested assets at the end of the project is expected to be \$150,000. According to Garren's assessment, Graze is likely to reduce the after-tax cash flow of the company's other detergent products by \$40,000 per year for the next 5 years. Garren's marginal cost of equity is 16% and marginal cost of debt before tax is 8%, and its target capital structure is 40% equity and 60% debt. The applicable tax rate is 30%.

- (a) What is the initial cash flow (at $t = 0$) for the project?
(5 marks)
- (b) What are the annual after-tax operating cash flows for the 5-year project?
(8 marks)
- (c) What is the terminal cash flow for the project?
(6 marks)
- (d) Should the company accept this new project (show appropriate calculations)?
(6 marks)

(TOTAL: 25 marks)

- END OF PAPER -

NANYANG TECHNOLOGICAL UNIVERSITY

SEMESTER 2 EXAMINATION 2015-2016

BU8201 – Business Finance

April 2016

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) Prices in the futures market are not determined immediately but at the time of future delivery of the goods transacted.
 - (B) A derivative security is an example of a financial asset.
 - (C) A long-term bond is an example of a capital market instrument but a common stock is not a capital market instrument.
 - (D) A Treasury bill is **not** an example of a money market instrument.
 - (E) When a person sells shares in SPH, he participates in a primary market transaction as the change in ownership must be recorded by SPH, the issuer of the shares.
- (2) Bond XYZ is a 7-year, \$1,000 par value bond with a 9% semiannual coupon. The bond, which may be called after two years at a price of \$1050, has a nominal yield to call of 6.0%. What is the current price of this bond (rounded to the nearest \$1)?
- (A) \$1,208
 - (B) \$1,127
 - (C) \$1,100
 - (D) \$1,082
 - (E) \$1,054
- (3) Which of the following statements is most CORRECT?
- (A) Shareholders typically dislike riskier projects more than bondholders, even though these projects offer higher expected returns.
 - (B) Making it more difficult for outside investors to acquire sufficient shares to control the company will reduce the conflict between managers and shareholders.
 - (C) Investing in riskier projects will increase the conflict between managers and shareholders.
 - (D) Paying managers based on stock price's performance over the longer-term will reduce the conflict between managers and bondholders.
 - (E) Threat of firing of managers by current shareholders will reduce the conflict between managers and stockholders.

Note: Question No. 1 continues on page 3

Question 1 (continued)

- (4) An investment under consideration has a payback of seven years and an initial cost of \$200,000. Assume the cash flows are normal cash flows. If the required return is 10 percent, what is the worst-case NPV (rounded to nearest \$1)?
- (A) \$20,673
(B) -\$50,722
(C) -\$75,238
(D) -\$97,368
(E) None of the above
- (5) Which of the following statements is most CORRECT?
- (A) A higher Days Sales Outstanding is an indication of better financial health of a company.
(B) Interest expense reduces net income and also reduces operating cash flow.
(C) Dividends paid reduce the net income that is reported on a company's income statement.
(D) Interest expense reduces net income but has no impact on operating cash flow.
(E) Both (A) and (B) are correct.
- (6) You intend to save \$500 per month for 5 years and thereafter save \$800 per month for another 7 years. The first monthly saving is at the end of the current month. The nominal rate of return on your investment is 6% per year. Calculate the amount of funds you should receive at the end of 12 years (rounded to nearest \$100).
- (A) \$124,500
(B) \$130,800
(C) \$136,300
(D) \$140,200
(E) None of the above

Note: Question No. 1 continues on page 4

Question 1 (continued)

- (7) Using its required return of 8%, the intrinsic value of stock ABC is calculated to be \$100. The actual stock price in the market is \$98.50. You buy ABC stock today and hold it for 1 year. During this one-year period, investors' risk aversion increased significantly. Assume ABC's stock is in equilibrium at the end of the investment period. Which of the following statements is most CORRECT?
- (A) The expected return at the time of purchase is more than 8% and the realized return over the 1-year holding period can be negative.
 - (B) The expected return at the time of purchase is more than 8% and the realized return over the 1-year holding period cannot be negative as all realized returns must be positive.
 - (C) The expected return at the time of purchase is less than 8% and the realized return over the 1-year holding period can be negative.
 - (D) The expected return at the time of purchase is more than 8% and the required return after the 1-year holding period is less than 8% as ABC stock's price would have fallen during this one year.
 - (E) Statements (B) and (D) are correct.
- (8) Which of the following statements is most CORRECT?
- (A) The more liquid the trading of a corporate bond is, the higher its liquidity premium will be.
 - (B) Other things held constant, a 5-year 8% annual coupon bond has more reinvestment rate risk than a 15-year 6% annual coupon bond.
 - (C) The price of a 3-year, 7% coupon bond is more sensitive to changes in interest rates than the price of an 8-year, 2% coupon bond.
 - (D) Over the same investment period, the capital gains yield on Bond AA is less than the capital gains yield on Bond BB; therefore Bond AA must have a lower yield to maturity than Bond BB.
 - (E) On an expected yield basis, the expected capital gains yield will never be negative because an investor would not purchase a bond with an expected capital loss.
- (9) Which of the following statements is most CORRECT?
- (A) Catering theory assumes that corporations adapt their dividend policy to the preference of their current dominant group of share investors.
 - (B) Stock price rising following a dividend increase can only be explained by the bird-in-the-hand theory.
 - (C) Stock price rising following a dividend increase can be explained by the tax preference theory (in the U.S. context).
 - (D) Stock price rising following a dividend increase can only be explained by the signaling hypothesis.
 - (E) Stock price rising following a dividend increase can be explained by the bird-in-the-hand theory or the signaling hypothesis.

Note: Question No. 1 continues on page 5

Question 1 (continued)

- (10) Assume a project has normal cash flows, i.e., it has a cash outflow followed by a series of cash inflows. Keeping all else unchanged, which of the following statements is CORRECT?
- (A) The project's IRR increases as the WACC declines.
 - (B) The project's IRR decreases as the WACC declines.
 - (C) The project's NPV decreases as the WACC increases.
 - (D) The project's MIRR is unaffected by changes in the WACC.
 - (E) The project's discounted payback decreases as the WACC increases.
- (11) Fabo Transport's 6-year bonds currently yield X%. The real risk-free rate, r^* , is 3.5% and is assumed to be constant. The maturity risk premium (MRP) is estimated to be 0.15% ($t - 1$), where t is equal to the time to maturity measured in years. The sum of default risk premium and liquidity premium for this company's bonds is 1.8%, and is believed to be the same for all bonds issued by this company. The average inflation rate is expected to be 5.5% for years 7, 8 and 9, and the yield on a 9-year bond issued by Fabo Transport is 10.5%. Disregard cross-product terms, i.e., if averaging is required, use the arithmetic average. The value of X% is closest to:
- (A) 9.3%
 - (B) 8.4%
 - (C) 8.1%
 - (D) 7.8%
 - (E) 7.6%
- (12) 30 years ago, your father purchased an antique vase for \$5,000. Now, your father plans to sell the antique vase for \$20,747.58. Assuming semi-annual compounding, the nominal rate of return that your father gets from this investment is closest to:
- (A) 2.4%
 - (B) 3.2%
 - (C) 4.2%
 - (D) 4.8%
 - (E) 6.2%
- (13) Which of the following statements is most CORRECT?
- (A) If management spends lavishly on personal perks, a company should decrease debt to have less interest payments.
 - (B) The optimal capital structure maximizes earnings per share of a company.
 - (C) Signaling effect of **stock issue** leads one to conclude that announcement of a new share issue is a positive signal.
 - (D) Even though the cost of debt is always lower than the cost of equity, it is possible that the WACC of a company can increase when financial leverage is increased. This is possible even though the company will then have more of its capital structure in debt which has a relatively lower cost than equity.
 - (E) Applying the Hamada equation, one concludes that the cost of equity will decline when a company increases financial leverage as the company enjoys greater tax savings arising from the increased interest expense.

Note: Question No. 1 continues on page 6

Question 1 (continued)

- (14) Grower Finance recently reported \$3,500,000 of operating costs other than depreciation, and \$175,000 of depreciation. The sales for the corresponding period was \$7,000,000. The company had no amortization charges, it had \$3,000,000 of bonds that carry a 6% interest rate, and its federal-plus-state income tax rate was 40%. Grower's Operating Cash Flow was closest to:
- (A) \$1,090,000
 - (B) \$2,170,000
 - (C) \$2,225,000
 - (D) \$2,305,000
 - (E) \$2,350,000
- (15) Which of the following statements is most CORRECT?
- (A) When a business generates a lot of profits, often it makes more sense to incorporate it rather than set it up as a partnership.
 - (B) A partnership is subject to double taxation: one at the partnership level and one at the personal income tax level of the respective partners.
 - (C) Unlimited life and typically lower tax rates are both advantages of a partnership.
 - (D) Unlimited life and typically lower tax rates are both advantages of a corporation.
 - (E) Limited Liability Partnership is a newer form of partnership while Limited Liability Corporation is not a newer form of partnership.
- (16) Nite Tester's stock is currently selling for \$45 a share. The stock is expected to pay a \$3 dividend at the end of the year. The dividend growth rate is expected to be a constant 5% per year, forever. The risk-free rate is 4% and the required market return is 14%. Assuming the stock is in equilibrium, the beta of this stock is closest to?
- (A) 0.77
 - (B) 0.98
 - (C) 1.12
 - (D) 1.27
 - (E) 1.35

Note: Question No. 1 continues on page 7

Question 1 (continued)

- (17) Given the following probability distribution of a stock's return, the Coefficient of Variation (CV) of the stock's returns is closest to:

Probability	Return
10.0%	7%
15.0%	8%
50.0%	10%
15.0%	12%
10.0%	13%

- (A) 0.30
- (B) 5.78
- (C) 0.82
- (D) 1.20
- (E) 0.17

- (18) Tussa Corp. has sales of \$2,000,000 per year, all on credit terms calling for payment within 30 days, and its accounts receivable is \$400,000. By how much would its accounts receivable decline (rounded to nearest \$1) if the company could take actions that caused all of its customers making on-time payments (i.e. making payments exactly on the maximum number of 30 days allowed under the credit terms), without affecting sales? Assume there are 365 days in a year.
- (A) \$180,688
 - (B) \$198,726
 - (C) \$222,400
 - (D) \$235,616
 - (E) None of the above

- (19) Lazarus Resources currently has no debt and the required return of its stock is 9.4%. The CEO of Lazarus is considering changing its capital structure to be 50% debt and 50% equity. Its corporate tax rate is 40%, the risk-free rate is 5% and the required market return is 9%. What will be Lazarus' weighted average cost of capital (WACC) under the new capital structure, given that the yield to maturity of its debt at the new capital structure level is 8%? Round your answer to the nearest 0.1%.
- (A) 7.8%
 - (B) 8.4%
 - (C) 8.8%
 - (D) 9.2%
 - (E) None of the above

Note: Question No. 1 continues on page 8

Question 1 (continued)

- (20) Let C_0 be the initial cash flow of a project. Which of the following statements is most CORRECT? (Hint: if $C_0 > 0$ and all future cash flows are negative, the project is a financing project, for example, a firm engaging this type of project borrows C_0 and the future negative cash flows are the repayments for this borrowing.)
- (A) If $C_0 < 0$ and all future cash flows are positive, reject the project if the internal rate of return is greater than or equal to the discount rate.
 - (B) If $C_0 < 0$ and all future cash flows are positive, accept the project if the internal rate of return is less than the discount rate.
 - (C) If $C_0 > 0$ and all future cash flows are negative, reject the project if the internal rate of return is less than or equal to the discount rate.
 - (D) If $C_0 > 0$ and all future cash flows are negative, reject the project if the internal rate of return is greater than the discount rate.
 - (E) The IRR analysis cannot be used for acceptance and rejection of a project if $C_0 > 0$ and all future cash flows are negative.

(TOTAL: 80 marks)

SECTION B

Question 2

- (a) Michael borrowed a 20-year mortgage loan from a bank which requires him to pay \$1,500 every month. The first payment is at the end of the first month. The nominal rate of this mortgage is 12% per year. Calculate the amount he still owes the bank after 8 years, i.e. after 96 monthly payments have been made (rounded to nearest \$1).

(4 marks)

- (b) Simon Tan, the CEO of Dreamland, has to decide between the following two competing projects with cash flows as indicated below:

Year	Project Smally	Project Biggie
0	-\$3,600	-\$X
1	X + 480	X + 1,200
2	2,880	3,600
3	3,600	4,800

The weighted average cost of capital (WACC) for either project is 10%. X is a positive number. If $$X < Y , then Simon would prefer Project Biggie for all values of X. Calculate the value of Y (rounded to nearest \$1).

(6 marks)

- (c) The stock of Cellutase Corp. just paid a dividend of D_0 . The dividend is expected to increase at a rate of 8% per year for 3 years, and at a rate of 6% per year in the fourth and fifth year, and at a constant growth rate of 3% per year forever after that. The required return of its stock is 12% per year. If the intrinsic value of this stock after 5 years is \$114.69 (i.e. $P_5 = \$114.69$), calculate the value of D_0 (rounded to nearest \$0.01).

(5 marks)

- (d) Project XYZ is a 3-year project and requires an initial investment of \$25,000. The cash flows are \$12,000, \$18,000 and \$22,000 in Year-1, Year-2 and Year-3 respectively. The weighted average cost of capital for this project is 7%. Calculate the Equivalent Annual Annuity (EAA) of this project (rounded to nearest \$10).

(5 marks)

(TOTAL: 20 marks)

- END OF PAPER -

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.
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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 -

NANYANG TECHNOLOGICAL UNIVERSITY

SPECIAL TERM II EXAMINATION 2014-2015

BU8201 – Business Finance

July 2015

Time Allowed: 2 hours

INSTRUCTIONS

- 1 This paper contains **FOUR(4)** questions and comprises **SEVEN(7)** pages and **ONE(1)** Appendix 1 of **FIVE(5)** pages.
- 2 Answer **ALL** questions.
- 3 The number of marks allocated is shown at the end of each question.
- 4 Write all your answers to the multiple-choice questions in Question 1 of **Section A** on the same page in your answer book.
- 5 Begin your answer to each question in **Section B** on a separate page of the answer book.
- 6 Answers to the questions in **Section B** will be graded for content and appropriate presentation.

Section A

Question 1

This question consists of **TEN(10)** multiple-choice questions. Choose only one correct answer from the given choices (A), (B), (C), (D) and (E). Write all answers of this question on the same page in your answer book. Each multiple-choice question carries **three(3)** marks.

- (1) Ten years ago, Tim invested \$5,000. Eight years ago, Erica invested \$10,000. Today, both Tim's and Erica's investments are each worth \$15,000 today. Assume that both Tim and Erica continue to earn their respective rates of return. Which one of the following statements is correct concerning these investments?

Note: Question No. 1 continues on page 2

Question 1 (continued)

- (A) Three years from today, Erica's investment will be worth more than Tim's.
(B) One year ago, Tim's investment was worth less than Erica's investment.
(C) Erica earns a higher rate of return than Tim.
(D) Tim has earned an average annual interest rate that is twice the average annual interest rate earned by Erica.
(E) None of the above statements is correct.
- (2) Which one of the following statements is correct given the following two sets of project cash flows?

	<u>Project A</u>	<u>Project B</u>
Year 1	\$6,000	\$2,000
Year 2	\$0	\$3,000
Year 3	\$2,500	\$3,000
Year 4	\$2,000	\$3,000

- (A) The cash flows for Project B are an annuity, but those of Project A are not.
(B) Both sets of cash flows have equal present values as if the discount rate is positive.
(C) The present value of the final cash flow for Project A will be discounted using an exponent of three.
(D) The present value of Project A cannot be computed because the second cash flow is equal to zero.
(E) As long as the discount rate is positive, Project B will always be worth less today than will Project A.
- (3) A bond has a market price that exceeds its face value. Which of the following features currently apply to this bond?

- (I) It is selling at a discount.
(II) It is selling at a premium.
(III) Its yield-to-maturity exceeds its coupon rate.
(IV) Its yield-to-maturity is less than its coupon rate .
- (A) III only
(B) I and III only
(C) I and IV only
(D) II and III only
(E) II and IV only

Note: Question No. 1 continues on page 3

Question 1 (continued)

- (4) Which of the following increase the price sensitivity of a bond to changes in interest rates?
- (I) increase in time to maturity
(II) decrease in time to maturity
(III) increase in coupon rate
(IV) decrease in coupon rate
- (A) II only
(B) I and III only
(C) I and IV only
(D) II and III only
(E) II and IV only
- (5) Which one of the following statements is correct?
- (A) The capital gains yield is the annual rate of change in a stock's price.
(B) Preferred stocks have constant growth dividends.
(C) A constant dividend stock cannot be valued using the dividend growth model.
(D) The dividend growth model can be used to compute the current value of any stock.
(E) An increase in the required return will decrease the capital gains yield.
- (6) A firm is considering two mutually exclusive projects and have determined that the crossover rate for these projects is 12%. Project A has an IRR of 16% and Project B has an IRR of 18%. Given this information, which one of the following statements is correct?
- (A) Project A should be accepted as its IRR is closer to the crossover point than is Project B's IRR.
(B) Project B should be accepted as it has the higher IRR.
(C) Both projects should be accepted as both of the project's IRRs exceed the crossover rate.
(D) Neither project should be accepted since both of the project's IRRs exceed the crossover rate.
(E) You cannot determine which project should be accepted given only the information provided.

Note: Question No. 1 continues on page 4

Question 1 (continued)

- (7) As the degree of sensitivity of a project to a single variable rises, the:
- (A) less important will that variable be to the final outcome of the project.
 - (B) less volatile will be the project's net present value to that variable.
 - (C) greater the importance of accurately predicting the value of that variable.
 - (D) greater the sensitivity of the project to the other variable inputs.
 - (E) less volatile will the project's outcome be.
- (8) Which one of the following statements is correct concerning unsystematic risk?
- (A) An investor should be rewarded for assuming unsystematic risk.
 - (B) Eliminating unsystematic risk is the responsibility of the individual investor.
 - (C) Unsystematic risk is rewarded when it exceeds the market level of unsystematic risk.
 - (D) Beta measures the level of unsystematic risk inherent in an individual stock.
 - (E) Standard deviation is a measure of unsystematic risk.
- (9) The WACC of a firm is dependent on the firm's:
- (I) growth rate.
 - (II) capital structure.
 - (III) preferred dividend payment.
 - (IV) retention ratio.
- (A) I and III only
 - (B) II and IV only
 - (C) I, II, and IV only
 - (D) I, III, and IV only
 - (E) I, II, III, and IV
- (10) A reverse stock split:
- (A) decreases the price per share.
 - (B) decreases the value of the company.
 - (C) increases the number of shares.
 - (D) decreases the number of shareholders.
 - (E) increases the price per share.

(TOTAL: 30 marks)

Section B

Question 2

- (a) A bank has launched a promotion program for its housing loans. Annual nominal interest rate for its housing loans will be at a special rate of 2% for the first two years, and a normal annual interest rate of 5% will then apply for the remaining loan period. If Sam takes up a 20-year \$1 million housing loan from the bank, which will be amortized over the loan period with end-of-the-month installment payments, what monthly installment would Sam have to pay after the first two years of special interest rate? (5 marks)
- (b) A company has decided that will only pay dividend every 2 years instead of every year. It estimates that the each dividend payment will be 10% higher than the previous dividend payment made two years ago. If the required return for its stock is 15%, and assuming the first dividend of \$1 will be paid 2 years from now (thereafter dividends will be paid every two years), what is its estimated price of its stock? (5 marks)
- (c) Five years ago, a company issued 10-year callable bonds with coupon rate of 8%, par value of \$1,000. Coupons for the bonds are paid annually. If the current interest rate for the bonds is 7.5%, determine (with appropriate calculations) whether the callable bonds are likely to be called if the call premium for each of the bonds is \$60. (5 marks)
- (d) A retirement annuity allows you to deposit a lump sum today, and it will then allow you to withdraw \$1,000 at the end of every month in the first year. In each of the subsequent years, your monthly withdrawal will be 10% lower compared to the monthly withdrawal in the previous year. If you are considering a 5-year annuity under such a plan, what is the minimum amount of lump sum you have to deposit today, assuming the applicable annual nominal interest rate is 6%, compounded monthly? (5 marks)

(TOTAL: 20 marks)

Question 3

Benny is a working adult while his wife is a full-time housewife. Starting from the new year 2016, Benny plans to deposit \$4,000 in the couple's bank account at the end of every odd month (i.e. January, March, May, etc.) of a year, while his wife Dora would withdraw half that amount, i.e. \$2,000, from the bank account at the end of every even month (i.e. February, April, June, etc.) of a year to meet household expenses. Nominal annual interest rate for the bank account is 5%, with monthly compounding.

- (a) How much will the couple have in the bank account at the end of the first year? (7 marks)
- (b) If the monthly deposit and withdrawal patterns remain unchanged, how many years will be required for the couple's bank account to reach \$500,000? (8 marks)
- (c) If the monthly amount which Dora withdraws is always half the monthly amount which Benny deposits, and the couple wants to have \$800,000 in their bank account 20 years from now, how much must Benny deposit each time? (10 marks)
- (TOTAL: 25 marks)

Question 4

Spandix Corporation is considering a replacement for its existing production system with a new system which it thinks is more efficient and cost effective. The applicable tax rate is 35%. Details of the old and new systems are as follows:

Old Production System

Current book value: \$500,000

Annual depreciation: \$80,000

Remaining useful life: 5 years

Current market selling price: \$300,000

Estimated salvage value 5 years from now (if system is not replaced): \$40,000

Annual maintenance cost: \$80,000

New Production System

Recommended selling price: \$2,000,000

Annual depreciation: \$400,000

Useful life: 5 years

Estimated salvage value 5 years from now: \$60,000

Annual maintenance cost: \$25,000

Note: Question No. 4 continues on page 7

Question 4 (continued)

- (a) What is the relevant initial cash flow (at t=0) for evaluating the project? (5 marks)
- (b) What are the appropriate annual operating cash flows and terminal cash flow for evaluating the project? (10 marks)
- (c) Without knowing the weighted average cost of capital (WACC) of Spandix Corporation, and based on the cash flows computed in part (a) and part (b) above, determine and explain whether Spandix should or should not replace its old production system? (10 marks)

(TOTAL: 25 marks)

- END OF PAPER -

BU8201

NANYANG TECHNOLOGICAL UNIVERSITY

SPECIAL TERM I EXAMINATION 2014-2015

BU8201 – Business Finance

June 2015

Time Allowed: 2 hours

INSTRUCTIONS

- 1 This paper contains **FOUR(4)** questions and comprises **SEVEN(7)** pages and **ONE(1)** Appendix 1 of **FIVE(5)** pages.
- 2 Answer **ALL** questions.
- 3 The number of marks allocated is shown at the end of each question.
- 4 Write all your answers to the multiple-choice questions in Question 1 of **Section A** on the same page in your answer book.
- 5 Begin your answer to each question in **Section B** on a separate page of the answer book.
- 6 Answers to the questions in **Section B** will be graded for content and appropriate presentation.

Section A

Question 1

This question consists of **TEN(10)** multiple-choice questions. Choose only one correct answer from the given choices (A), (B), (C), (D) and (E). Write all answers of this question on the same page in your answer book. Each multiple-choice question carries three(3) marks.

- (1) You need \$50,000 as a down payment for a house 5 years from now. You can earn 4% annual compounded interest on your savings. You can either deposit one lump sum today for this purpose or you can wait a year and deposit a lump sum. How much additional money must you deposit if you wait for one year rather than making the deposit today?

Note: Question No. 1 continues on page 2

Question 1 (continued)

- (A) \$1,078.98
- (B) \$1,111.13
- (C) \$1,643.85
- (D) \$1,748.03
- (E) \$1,920.18

(2) You are considering two projects with the following cash flows:

	<u>Project X</u>	<u>Project Y</u>
Year 1	\$5,000	\$1,000
Year 2	\$4,000	\$2,500
Year 3	\$2,500	\$4,000
Year 4	\$1,000	\$5,000

Which of the following statement(s) is (are) true concerning these two projects?

- (I) Both projects have the same present value, if their discount rates are positive.
 - (II) Both projects have the same present value if the discount rate is zero.
 - (III) Project X has a higher present value than Project Y, if the discount rate is positive.
 - (IV) Project Y has a higher present value than Project X, if the discount rate is positive.
- (A) II only
 - (B) I and III only
 - (C) II and III only
 - (D) II and IV only
 - (E) I, II, and IV only
- (3) An 8% bond that pays interest semi-annually was issued last year. Which two of the following most likely apply to this bond today if the current market interest rate for the bond is 6%?
- (I) Repayment of the bond is not amortized over the period of the bond.
 - (II) The current yield is equal to the coupon rate.
 - (III) The yield-to-maturity is equal to the coupon rate.
 - (IV) The market price of the bond is different from its par value .

Note: Question No. 1 continues on page 3

Question 1 (continued)

- (A) I and III only
 - (B) I and IV only
 - (C) II and III only
 - (D) II and IV only
 - (E) III and IV only
- (4) If you expect interest rates to decline in the near future, which one of the following bonds should you purchase now to maximize your gains if the rate decline does occur?
- (A) short-term; low coupon
 - (B) short-term; high coupon
 - (C) long-term; zero coupon
 - (D) long-term; low coupon
 - (E) long-term; high coupon
- (5) Based on the dividend growth model, if you expect the market rate of return to increase across the board on all stocks, then you should also expect:
- (A) an increase in all stock values.
 - (B) all stock values to remain constant.
 - (C) a decrease in all stock values.
 - (D) dividend-paying stocks to maintain a constant price while non-dividend paying stocks decrease in value.
 - (E) dividend-paying stocks to increase in price while non-dividend paying stocks decrease in value.
- (6) Which of the following statements related to the internal rate of return (IRR) are correct?
- (I) The IRR method of analysis may result in multiple IRRs if the cash flows are non-normal.
 - (II) The IRR that causes the net present value of the differences between two project's cash flows to equal zero is called the *crossover rate*.
 - (III) For independent projects, the IRR method would have the same accept/reject recommendations as that of the net present value method.
 - (IV) Both the timing and the amount of a project's cash flows affect the value of the project's IRR.

Note: Question No. 1 continues on page 4

Question 1 (continued)

- (A) I and II only
 - (B) III and IV only
 - (C) II and III only
 - (D) I, II and III only
 - (E) I, II, III, and IV
- (7) Which one of the following statements concerning scenario analysis is most correct?
- (A) The pessimistic case scenario determines the maximum loss, in current dollars, that a firm could possibly incur from a given project.
 - (B) Scenario analysis defines the entire range of results that could be realized from a proposed investment project.
 - (C) Scenario analysis determines which variable has the greatest impact on a project's net present value.
 - (D) Scenario analysis helps managers analyze various outcomes that are possible given reasonable range for each of the assumptions.
 - (E) Management is guaranteed a positive outcome for a project when the worst case scenario produces a positive NPV.
- (8) Which one of the following is an example of unsystematic risk?
- (A) Income taxes are increased across the board
 - (B) A national sales tax is adopted
 - (C) Inflation decreases at the national level
 - (D) An increased feeling of prosperity is felt around the globe
 - (E) Consumer spending on entertainment decreased nationally
- (9) Which one of the following statements is correct?
- (A) The after-tax cost of debt of a firm is usually greater than the prevailing yield-to-maturity on the firm's bonds.
 - (B) It is more risky for a firm to issue preferred stock compared to issuing bonds.
 - (C) A firm's cost of retained earnings is usually lower than the cost of new common equity.
 - (D) The cost of equity of a firm can only be estimated using CAPM.
 - (E) A firm's weighted average cost of capital will remain constant as long as its capital structure remains constant.

Note: Question No. 1 continues on page 5

Question 1 (continued)

(10) Which one of the following statements is most correct?

- (A) Firms prefer to cut dividend payments rather than borrow money to fund a short-term cash need.
- (B) Share repurchases tend to have tax disadvantages to shareholders.
- (C) Maintaining a steady dividend is a key goal of most dividend-paying firms.
- (D) Tax rates are the key factor in determining a firm's dividend policy.
- (E) Stock prices tend to ignore expected changes in dividend payments.

(TOTAL: 30 marks)

Section B

Question 2

(a) Jack takes up a 5-year \$240,000 loan from a bank with nominal loan interest rate of 6% per annum. The loan is to be repaid at the end of every month with equal monthly principal repayment over the period of the loan. Interest for each month is also to be paid at the end of every month and will be computed based on the outstanding principal amount at the start of the month. How much total dollar interest would Jack have to pay for the entire loan period?

(5 marks)

(b) A stock's dividend is expected to grow at an annual rate of 50% during the first 5 years, but will have zero growth subsequently. Assuming the appropriate discount rate for the first 5 years is 12%, and the appropriate discount rate subsequently is 10%, what is the estimated value of this stock if the stock recently paid \$0.50 dividend?

(5 marks)

(c) A firm issues two bonds, Bond A and Bond B. Both bonds have the same par value and have 10 years to maturity. Bond A pays coupons semiannually, while Bond B pays coupons quarterly. Bond A has an annual coupon rate of 6% and its current market price is \$960. If the current market price of Bond B is \$1,050, what is its annual coupon rate ?

(5 marks)

Note: Question No. 2 continues on page 6

Question 2 (continued)

- (d) A 4-year project has cash flows of \$0.5 million, \$1 million, \$1.2 million and \$Y at the end of each of the four years, respectively. The project has an IRR of 26%, and an NPV of \$2.3 million at a discount rate of 12%. What is the project's cash flow at the end of the fourth year, i.e. what is Y? (5 marks)

(TOTAL: 20 marks)

Question 3

George is 35 years old today, and he wants to start a 25-year plan to save for his semi-retirement at age 60. He will start by saving \$500 at the end of each month, the first deposit will start one month from now. Because George expects his salary to increase over time, he plans to double his monthly saving every 5 years, till he reaches age 60. Nominal annual interest rate earned for his savings will be at 4%, compounded monthly.

- (a) How much will George have in his savings account at age 40? (7 marks)
- (b) How much will George have in his savings account when he retires at age 60? (8 marks)
- (c) When George turns age 45, an unfortunate event happens and George needs to reduce his monthly savings from the planned amount for the next 5 years, i.e. till the day he reaches age 50 (while keeping the monthly deposits for all other months the same as in part (b) above). However, George does not want his savings account to be less than \$1.1 million when he retires at age 60. What is the minimum monthly deposit George must make during the 5-year period between age 45 and age 50? (10 marks)

(TOTAL: 25 marks)

Question 4

Rical Corporation is considering launching a production line for its new 3D printer cartridge that the company has spent \$200,000 to develop. The new production line would require \$3 million investment in equipment and facilities, which will be depreciated at the rate of \$600,000 per year. The new production line will have to occupy a factory floor that is currently used to produce a peripheral product which generates before-tax annual cash flow of \$300,000 for the company (and this existing production will have to be terminated to make way for the new 3D printer cartridge production).

Note: Question No. 4 continues on page 7

Question 4 (continued)

The company's current assets will have to increase by \$100,000 and accounts payable will also increase by \$60,000. The company estimates that the production of the new 3D printer cartridges will last only for 10 years because the product will be obsolete by then. At termination of the production, the equipment and facilities can be sold at \$400,000, and the invested net operating working capital will be recovered. During the 10 years of production, the company expects annual sales to be \$6 million per year for the first 5 years, and \$10 million per year for the subsequent 5 years. Annual operating costs, excluding depreciation cost, is 50% of sales. The appropriate discount rate for the project is 12%, and the corporate tax rate is 30%.

- (a) What is the initial cash flow (at $t = 0$) for the project? (5 marks)
- (b) What are the annual after-tax operating cash flows for the 10-year project? (8 marks)
- (c) What is the terminal cash flow for the project? (6 marks)
- (d) Should the company proceed with this project (show appropriate calculations)? (6 marks)

(TOTAL: 25 marks)

- END OF PAPER -

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 -

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 -

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.
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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 most 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) $r_s > r_e > \text{WACC} > r_d$.
(B) $r_e > \text{WACC} > r_s > r_d$.
(C) $r_e > r_s > \text{WACC} > r_d$.
(D) $\text{WACC} > r_e > r_s > r_d$.
(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**). Tessler 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 -

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

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 3

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 11

Appendix 1 (continued)

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

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

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

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

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

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

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

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

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

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

- END OF APPENDIX 1 -