NATIONAL UNIVERSITY OF SINGAPORE

Semester 2 (2005/2006) Examinations

FNA2004 FINANCE

April 2006 - Time Allowed 2 Hours

INSTRUCTIONS TO CANDIDATES

1. This examination paper contains **TWO(2) sections** and comprises **TWELVE (12)** printed pages. **ATTEMPT ALL QUESTIONS.**

2. Students are required to write their answers in the answer booklets and answer sheet provided.

3. This is an Open Book examination.

<u>Section 1: Multiple Choice Questions (25 X 2 = 50 marks)</u>

Use the answer sheet provided. Select the most appropriate answer.

1. Stock X has a required return of 10 percent, while Stock Y has a required return of 12 percent. 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.
   E. None of the statements above is correct.

2. Assume that you plan to buy a share of XYZ stock today and to hold it for 2 years. Your expectations are that you will not receive a dividend at the end of Year 1, but you will receive a dividend of $9.25 at the end of Year 2. In addition, you expect to sell the stock for $150 at the end of Year 2. If your expected rate of return is 16 percent, how much should you be willing to pay for this stock today?

   A. $164.19
   B. $ 75.29
   C. $107.53
   D. $118.35
   E. $131.74

3. An analyst is trying to estimate the intrinsic value of the stock of Harkleroad Technologies. The analyst estimates that Harkleroad's free cash flow during the next year will be $25 million. The analyst also estimates that the company's free cash flow will increase at a constant rate of 7 percent a year and that the company's weighted average cost of capital (WACC) is 10 percent. Harkleroad has $200 million of long-term debt and preferred stock, and 30 million outstanding shares of common stock. What is the estimated per-share price of Harkleroad Technologies' common stock?

   A. $ 1.67
   B. $ 5.24
   C. $18.37
   D. $21.11
   E. $27.78

4. You recently received a letter from Cut-to-the-Chase National Bank that offers you a new credit card that has no annual fee. It states that the annual percentage rate (APR) is 18 percent on outstanding balances. Cut-to-the-Chase National Bank bills you on a monthly basis. What is the effective annual interest rate?

   A. 18.81%
   B. 19.56%
   C. 19.25%
   D. 20.00%
   E. 18.00%

5. You are contributing money to an investment account so that you can purchase a house in five years. You plan to contribute six payments of $3,000 a year. The first payment will be made today (t = 0) and the final payment will be made five years from now (t = 5). If you earn 11 percent in your investment account, how much money will you have in the account five years from now (at t = 5)?

   A. $19,412
   B. $20,856
   C. $21,683
   D. $23,739
   E. $26,350

6. Which of the following securities has the largest present value? Assume in all cases that the annual interest rate is 8 percent and that there are no taxes.

   A. A five-year ordinary annuity that pays you $1,000 each year.
   B. A five-year zero coupon bond that has a face value of $7,000.
   C. A preferred stock issue that pays an $800 annual dividend in perpetuity. (Assume that the first dividend is received one year from today.)
   D. A seven-year zero coupon bond that has a face value of $8,500.
   E. A security that pays you $1,000 at the end of 1 year, $2,000 at the end of 2 years, and $3,000 at the end of 3 years.

7. Kleen Office Supply had $24,000,000 in sales last year. The company's net income was $400,000, its total assets turnover was 6.0, and the company's return on equity (ROE) was 15 percent. The company is financed entirely with debt and common equity. What is the company's debt ratio?

   A. 0.20
   B. 0.30
   C. 0.33
   D. 0.60
   E. 0.66

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8. Pepsi Corporation's current ratio is 0.5, while Coke Company's current ratio is 1.5. Both firms want to "window dress" their coming end-of-year financial statements. As part of its window dressing strategy, each firm will double its current liabilities by adding short-term debt and placing the funds obtained in the cash account. Which of the statements below best describes the actual results of these transactions?

   A. The transactions will have no effect on the current ratios.
   B. The current ratios of both firms will be increased.
   C. The current ratios of both firms will be decreased.
   D. Only Pepsi Corporation's current ratio will be increased.
   E. Only Coke Company's current ratio will be increased.

9. Assume that the risk-free rate remains constant, but that the market risk premium declines. Which of the following is likely to occur?

   A. The required return on a stock with a beta = 1.0 will remain the same.
   B. The required return on a stock with a beta < 1.0 will decline.
   C. The required return on a stock with a beta > 1.0 will increase.
   D. Statements b and c are correct.
   E. All of the statements above are correct.

10. You have been scouring *The Wall Street Journal* looking for stocks that are "good values" and have calculated expected returns for five stocks. Assume the risk-free rate (k_{RF}) is 7 percent and the market risk premium (k_M - k_{RF}) is 2 percent. Which security would be the best investment? (Assume you must choose just one.)

	Expected Return	Beta
A.	9.01%	1.70
B.	7.06%	0.00
C.	5.04%	-0.67
D.	8.74%	0.87
E.	11.50%	2.50

11. You recently purchased a 20-year investment that pays you $100 at t = 1, $500 at t = 2, $750 at t = 3, and some fixed cash flow, X, at the end of each of the remaining 17 years. You purchased the investment for $5,544.87. Alternative investments of equal risk have a required return of 9 percent. What is the annual cash flow received at the end of each of the final 17 years, that is, what is X?

   A. $600
   B. $625
   C. $650
   D. $675
   E. $700

12. The CFO of Mulroney Brothers has suggested that the company should issue $300 million worth of common stock and use the proceeds to reduce some of the company's outstanding debt. Assume that the company adopts this policy, and that total assets and operating income (EBIT) remain the same. The company's tax rate will also remain the same. Which of the following will occur?

    A. The company's net income will increase.
    B. The company's taxable income will fall.
    C. The company will pay less in taxes.
    D. Statements b and c are correct.
    E. All of the statements above are correct.

13. From the following income statement information, calculate Johnson's after tax cash flow from operations. Net sales are $2,500; Cost of goods sold are $1,000; Operating expenses are $500; Depreciation expense is $ 500; and the tax rate is 20%

    A. $ 400
    B. $ 800
    C. $ 900
    D. $1,300
    E. None of the above

14. Diamond Co. has 11-year annual coupon bonds outstanding with a face value of $1,000, a current yield-to-maturity of 8% and a coupon rate of 9%. If the market interest rates were to unexpectedly and immediately increase by 1%, what would be the price change be on the bonds?

    A. -$59
    B. -$71
    C. $0
    D. $10
    E. $35

15. Bendix Industries Inc. hold's on average $50,000 in cash and marketable securities, $300,000 in inventory, and $100,000 in accounts receivable. In addition, Bendix's accounts payable of $250,000 are stable over time. What is the amount of Bendix's permanent funding requirement?

    A. $100,000
    B. $200,000
    C. $300,000
    D. $400,000
    E. $500,000

16. Because managing accounts receivable is just like managing any other investment, decisions about the level of accounts receivable should be guided by

    A. a cost-benefit analysis
    B. the value of the accounts receivable
    C. the effect of accounts receivable levels on sales
    D. the effect of accounts receivable levels on customer relations
    E. All of the above

17. In June, a firm had an ending cash balance of $55,000. In July, the firm had a net cash flow of $60,000. The minimum cash balance required by the firm is $100,000. At the end of July, the firm had

    A. required total financing of $15,000
    B. required total financing of $40,000
    C. required total financing of $75,000
    D. an excess cash balance of $15,000
    E. an excess cash balance of $75,000

18. A firm has projected sales in September, October, and November of $4000, $8000, and $3000, respectively. The firm makes 40% of sales for cash and collects the balance one month following the sale. The firm's total cash receipts in October are

    A. $2,400
    B. $3,200
    C. $5,600
    D. $6,000
    E. $9,600

19. You sold (wrote) a May American call option on Lucent stock with an exercise price of 10. Which of the following statements is true?
    A. You are obligated to sell Lucent shares for $10 when the option expires in May, regardless of the stock's market price
    B. You are obligated to sell Lucent shares for $10 at any time prior to the option expiration in May, if the owner of the option chooses to exercise
    C. You are obligated to buy Lucent shares for $10 when the option expires in May, regardless of the stock's market price
    D. You have the right to buy Lucent shares for $10 at any time prior to the option expiration in May, regardless of the stock's market price
    E. You have the right to sell Lucent shares for $10 at any time prior to the option expiration in May, regardless of the stock's market price

20. Cash receipts may include all of the following **EXCEPT**

   A. fixed asset sales
   B. dividend receipts
   C. rent receipts
   D. depreciation expense
   E. interest income

21. What is the price of a 15-year corporate bond that matures in 10 years if it pays a 9% coupon semiannually and has a yield to maturity of 8%?

   A. $935.82
   B. $919.39
   C. $1000
   D. $1067.10
   E. $1085.59

22. Which of the following is likely to increase the additional funds needed (AFN) in a given year?

   A. The company reduces its dividend payout ratio
   B. The company's profit margin increases
   C. The company decides to reduce its reliance on accounts payable as a form of financing
   D. The company is operating well below full capacity
   E. All of the statements above are correct

23. You think the price of a stock is going to fall. In order to make money, you could:

   I. Buy a call option on the stock.
   II. Sell a call option on the stock.
   III. Buy a put option on the stock.
   IV. Sell a put option on the stock.
   V. Short sell the stock.

   A. I and IV only
   B. II and III only
   C. I only
   D. IV only
   E. II, III, and V only

24. Box Company writes cheques averaging $18,000 a day, and it takes four days for these checks to clear. The firm also receives cheques in the amount of $17,000 per day, but the firm loses three days while its receipts are being deposited and cleared. What is the firm's net float in dollars?

    A. $123,000
    B. $ 72,000
    C. $ 51,000
    D. $ 21,000
    E. $ 1,000

25. Vander Inc. is considering two average-risk alternative ways of producing its patented polo shirts. Process S has a cost of $8,000 and will produce net cash flows of $5,000 per year for 2 years. Process L will cost $11,500 and will produce cash flows of $4,000 per year for 4 years. The company has a contract that requires it to produce the shirts for 4 years, but the patent will expire after 4 years, so the shirts will not be produced after 4 years. Inflation is expected to be zero during the next 4 years. If cash inflows occur at the end of each year, and if Vander's cost of capital is 10 percent, by what amount will the better project increase Vander's value?

    A. $ 677.69
    B. $1,098.89
    C. $1,179.46
    D. $1,237.76
    E. $1,312.31

Section 2 (50 marks)

Question 2: The Health Gym (16 marks)

Observing the popularity of exercise gyms in Singapore, you realize that the time is ripe for you to start and run one in your neighborhood. You find an abandoned warehouse which will meet your needs. It rents for $40,000/ year. You estimate that it will initially cost $50,000 to renovate the place and buy Nautilus exercise equipment for the center. (There will be no salvage and the entire initial cost is depreciable) You have done a market survey which leads you to believe that you will get 600 members each paying $500/year. Cash inflows are assumed to begin at t = 1. You have also found 5 instructors you can hire for $24,000/year apiece. Utilities are estimated to be about $8,000/year. You intend to fund your investment partially with a loan where the annual interest expense is projected to be $2,000/year. In addition, a net operating working capital of $10,000 is required. Your tax rate will be 20% and you choose to use straight line depreciation to fully depreciate your initial investment. The discount rate (WACC) is 15%. You expect to retire to Bali in ten years and you will give the gym, including all assets and liabilities, to your brother as a gift.

a) What is the annual differential free cash flows? (2 marks)

b) Calculate the discounted payback and NPV of your decision. Should you go ahead with it? (5 marks)

c) What is the minimum number of annual membership that you require in order for this project to be viable? (3 marks)

d) You are only 50 percent certain the economic conditions will be average resulting in the NPV calculated in (b). If economic conditions are above average, the NPV estimated would be 30 percent higher. Conversely, if economic conditions are below average, the NPV estimated would be 20 percent lower. You estimate the probability of the economic scenarios as follows:

Economic Scenario	**Probability of Outcome**
Above average	0.30
Average	0.50
Below average	0.20

Calculate the project's i) expected NPV (2 marks)

ii) standard deviation (2 marks)

iii) coefficient of variation (2 marks)

Question 3: The Portfolio (15 marks)
The Chocolate Ice Cream Company and the Vanilla Ice Cream have agreed to merge and form the Megacream Suppliers. Before the merger, the following information is available for each company.

	Expected return	**Beta**
Chocolate Ice Cream Company	25%	2.0
Vanilla Ice Cream Company	10%	0.5

The market portfolio's expected rate of return is given as 15%.

(a) Assuming that the capital asset pricing model holds, compute the relevant risk-free rate of interest (5 marks).

(b) After the merger, the beta of the newly merged firm, Megacream, is 1.25. What are the relative sizes of these two firms before the merger? Explain (5 marks).

(c) "If two portfolios of risky assets are both located on the Capital Market Line (CML), their rates of return must be perfectly positively correlated." Evaluate this claim (5marks).

Question 4: The Zenith Group (19 marks)

Zenith Group
Balance Sheet for Year Ending 2000 and 2001
($ in millions)

	2000	2001		2000	2001
Cash	$ 75	$ 135	Accounts payable	$ 89	$110
Accounts receivable	230	214	Notes payable	227	442
Inventory	240	188	Current liabilities	316	552
Current assets	545	537	Long-term debt	615	440
Fixed assets	788	890	Common stock	55	55
			Retained earnings	347	380
Total assets	$1,333	$1,427	Total liab. & equity	$1,333	$1,427

Zenith Group
2001 Income Statement
($ in millions)

Net sales	$905
Less: Cost of goods sold	522
Less: General & adm. expenses	93
Less: Depreciation	110
Earnings before interest and taxes	180
Less: Interest paid	61
Earnings before taxes	119
Less: Taxes	30
Net income	$ 89

(a) Suppose Zenith is projecting a 20% increase in sales for the coming year, and that cost of goods sold and general/administrative expenses remain a constant percentage of sales. Also assume that depreciation, interest paid, and the firm's tax rate remain unchanged. What will the firm pay out in dividends in 2002? Assume the firm's dividend payout is 40%. (4 marks)

(b) Suppose Zenith is currently operating at 70% of capacity. What is the full capacity sales figure? (2 marks)

(c) Assume Zenith is projecting a 20% increase in sales for the coming year, and that assets, all costs, and current liabilities are proportional to sales. Long-term debt is not proportional to sales. Assume the firm's tax rate remains unchanged and the dividend payout is 40%. What is the external financing needed (EFN) for 2002? (5 marks)

(d) Calculate the Zenith' 2001 ROE using the Extended Du Pont Equation. (4 marks)

(e) Zenith is considering the purchase of a lockbox service from the local bank. Currently, it takes 5 days to collect funds from customers; this would be reduced by 2 days with the lockbox system. The average number of payments received per day is 400 and the average check size is $120. The bank will charge 4¢ per check in return for operating the lockbox system. Assume one-year T-bills yield 6%, and use a 360-day year. Should Zenith purchase the system? (4 marks)

- END OF PAPER -