

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
FACULTY OF COMMERCE
DEPARTMENT OF FINANCE
BACHELOR OF COMMERCE HONOURS DEGREE IN
Accounting; Finance; Banking
Insurance & Risk Management
Actuarial Science
Marketing; Management
PART II Ist SEMESTER FINAL EXAMINATION - NOV/DEC 2005
CORPORATE FINANCE I [CFI 2101]
TIME ALLOWED: 3HOURS

INSTRUCTIONS

- ♦ ANSWER BOTH QUESTIONS IN SECTION A AND ANY THREE IN SECTION B

SECTION A [COMPULSORY]

QUESTION 1

[20 Marks]

Your division is considering two investment projects each of which requires an upfront expenditure of \$50 million. You estimate that the cost of capital is 10 percent and that the investments will produce the following after tax cashflows [in millions of dollars]:

<u>Year</u>	<u>Project A</u>	<u>Project B</u>
1	10	40
2	20	20
3	30	16
4	40	12

- (a) What is the regular payback period for each of the projects? [2]
- (b) What is the discounted payback period for each of the projects? [5]
- (c) If the two projects are independent and the cost of capital is 10 percent, which project should the firm undertake? [7]
- (d) Calculate the modified IRR [MIRR] of each project. [6]

QUESTION 2

[20 Marks]

Euromage Inc. produces satellite earth stations which sell for \$100 000 each. The firm's fixed costs are \$2m; 50 earth stations are produced and sold each year; profits total \$500 000 and the firm's assets [all equity financed] are \$5m. The firm estimates that it can change its production process, adding \$4m to investment and \$500 000 to fixed operating costs. This change will;

1. Reduce variable costs per unit by \$10 000 and
2. Increase output by 20 units but
3. The sales price on all units will have to be lowered to \$95 000 to permit sales of the additional output.

The firm has tax loss carry forwards that cause its tax rate to be zero, its cost of equity is 15% and it uses no debt.

- (a) Should the firm make the change? Support your answer with calculations. [5]
- (b) Would the firm's operating leverage increase or decrease if it made the change? [3]
- (c) Calculate the break-even point [2]
- (d) Would the new situation expose the firm to more or less business risk than the old one? [3]
- (e) What is financial risk? [2]
- (f) How can financial risk be measured? [2]
- (g) What are the similarities between operating leverage and financial leverage? [3]

SECTION B

QUESTION 3

[20 Marks]

- (a) Explain the role of a Financial Manager. [4]
- (b) What are the three institutional arrangements that help in ensuring that the shareholders' pockets are close to the managers' hearts? [6]
- (c) You have started a small manufacturing company. You have bought a machine in terms of a suspensive sales agreement whereby you are required to make equal monthly instalments from today, 1 April 1998, to 1 March 2003. The cash price of the machine is \$22 000 plus VAT of 15%. Finance charges are linked to the bank rate. The bank will charge you a premium of 300 b.p. above the bank rate which is currently 12.5%.

REQUIRED

- i. Determine the equal monthly instalment amount required to purchase the machine over five years. [3]
- ii. If the bank rate increases to 14% today, before your first instalment payment, what will be the increase in your monthly instalment amount? [4]
- iii. The bank offers to give you a three-month “holiday” so that you acquire the machine today but the monthly repayments begin on 1 July 1998. The last payment is still on 1 March 2003. What will your monthly instalment be if the bank rate is currently 14%. [3]

QUESTION 4

[20 Marks]

- (a) Define the following terms, using graphs or equations to illustrate your answer wherever feasible:

- (i) Market Risk [2]
- (ii) Diversifiable Risk [2]
- (iii) Relevant Risk [2]
- (iv) Security Market Line [SML] [2]

- (b) The NUST Investment fund, in which you plan to invest some money, has a total capital of \$500 million invested in five stocks:

<u>STOCK</u>	<u>INVESTMENT</u> <u>\$ [MILLION]</u>	<u>STOCK'S BETA</u> <u>COEFFICIENT</u>
A	160	0.5
B	120	2.0
C	80	4.0
D	80	1.0
E	60	3.0

The beta coefficient for a fund like NUST Investment can be found as a weighted average of the fund's investment. The current risk-free rate is 6%, whereas market returns have the following estimated probability distribution for the next period:

PROBABILITY

0.1

0.2

0.4

0.2

0.1

MARKET RETURN %

7

9

11

13

15

- (i) What is the expected equation for the SML? [3]
- (ii) Compute the fund's required rate of return for the next period. [3]
- (iii) Suppose Panashe Chitsinde, the president, receives a proposal for a new stock. The investment needed to take a position in the stock is \$50 million, it will have an expected return of 15% and its estimated beta coefficient is 2.0. Should the new stock be purchased? [4]
- (iv) At what expected rate of return should the fund be indifferent to purchasing the stock in (iii) above. [2]

QUESTION 5

[20 Marks]

- (a) What is an optimal portfolio? [5]
- (b) Outline two assumptions of CAPM [2]
- (c) Explain Steven Ross's Arbitrage Pricing Theory [APT] [5]
- (d) Security A has an expected rate of return of 6%, a standard deviation of expected returns of 30%, a correlation coefficient with the market of -0.25 and a beta coefficient of -0.5 . Security B has an expected return of 11%, a standard deviation of returns of 10%, a correlation with the market of 0.75 , and a beta coefficient of 0.5 .
 - (i) Which security is more risky? Justify your answer. [8]

QUESTION 6

[20 Marks]

"It may be true that in an efficient market there **should** be no patterns in stock prices, but if everyone believes that they **do** exist, then this belief will be self-fulfilling" **DISCUSS**