NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF COMMERCE

DEPARTMENT OF BANKING

PORTFOLIO THEORY AND INVESTMENT ANALYSIS CBA 4104

FINAL EXAMINATION JANUARY 2008

TIME: 3 HOURS

INSTRUCTIONS TO CANDIDATES

This paper contains SIX (6) questions.

Answer question ONE (1) and any other three (3) questions

All Questions carry [25] Marks each

Start the answer to each full question on a fresh page.

Indicate on your answer booklet whether you are in the conventional or parallel programme.

INFORMATION FOR CANDIDATES

The number of marks is given in brackets [ ] at the end of each question or part question.

The businesses in this question paper are intended to be fictitious.

This paper consists of 5 printed pages

[Turn over]

QUESTION 1

You are given the following information regarding a universe of securities available to an investor:

	Debt	Equity	Treasury bill
Expected return	10%	30%	5%
Standard deviation	20%	60%	

The correlation coefficient between debt and equity is 0.4

Required:

(a) Calculate optimal risky portfolio (M), its expected return and standard deviation **[8 Marks]**

(b) You are told that the investor's risk-aversion is A = 5. Find the optimal weight of risky portfolio (M) and the Treasury bill in the complete portfolio **[3 Marks]**

(c) Calculate the expected return and standard deviation of the complete portfolio **[8 Marks]**

(d) If the total amount available is $100 million, how much will the investor invest in debt, equity and the Treasury bill? **[6 Marks]**

[TOTAL 25 MARKS]

QUESTION 2

An investor purchases 1000 shares of VMG Triple Alliance (Ltd) at $80 each, on margin. The initial margin requirement is 70% and the maintenance margin requirement is 50%.

(a) Present a margin account, capturing the information given above **[2 Marks]**

(b) Two months later, the share price of VMG Triple Alliance (Ltd) declines to $55.

(i) How does the margin account look like after this development? **[2 Marks]**

(ii) Calculate the amount of money that should be paid as variation margin by the investor to bring the margin to maintenance level. **[4 Marks]**

(iii) Calculate the number and value of shares that the investor will have to add into the account in order to bring the margin to maintenance level . **[4 Marks]**

(c) Assume the share price increases from $80 to $96.

(i) Calculate the margin **[1 Marks]**

(ii) How many more shares can the investor buy using borrowed funds if the margin is to be at the maintenance level? **[5 Marks]**

(iii) Show the margin account after this transaction **[2 Marks]**

(d) State and explain three advantages and two risks associated with margin trading **[5 Marks]**

[TOTAL 25 MARKS]

QUESTION 3

(a) Given the following information, calculate and evaluate Company A's Beta value.

Standard deviation of company A	30%
Market risk	20%
Correlation coefficient of company A and the market	0.6

[4 Marks]

(b) State and explain any five (5) factors, which affect the beta of a security **[7 Marks]**

(c) Why is total risk, as measured by the variance of returns, unrelated to the market-required rate of return on a project? **[5 Marks]**

(d) An investor is considering two mutually exclusive securities X and Y. The risk and return estimates of these securities are given below.

	X	Y
Expected return	0.15	0.18
Standard deviation	0.50	0.75
Beta	1.80	1.40

Assume the Treasury bill rate is 10% and the expected market return is 14%. What would be the investor's decision if the Capital Asset Pricing Model (CAPM) were used? **[6 Marks]**

(e) Explain the main difference between the CAPM and the Arbitrage Pricing Theory. **[3 Marks]**

TOTAL 25 MARKS]

QUESTION 4

(a) Calculate the price of a bond with a par value of $1 000 000 to be paid in ten years, coupon rate of 10%, and a required yield of 12%. The coupon payments are made semi-annually to bondholders **[3 Marks]**

(b) As Fund Manager at a leading asset management company, you have been provided with the following information pertaining to a bond issued by NUST Ltd.

Bond	NUST 2007
Coupon rate	7%
Yield to maturity	8%
Term to maturity	4 years
Face value	$100
Coupon payment	Annually
Market price	$95.92

Required:

(i) Calculate the current yield of NUST 2007 bond **[3 Marks]**

(ii) Calculate the adjusted current yield of NUST 2007 bond **[3 Marks]**

(iii) Calculate the Macaulay Duration of the NUST 2007 bond **[5 Marks]**

(iv) Calculate the modified duration of the NUST 2007 bond **[4 Marks]**

(c) Discuss any five (5) factors that account for differences in the yields of corporate bonds **[7 Marks]**

[TOTAL 25 MARKS]

QUESTION 5

(a) Distinguish between active and passive bond portfolio management strategies **[7 Marks]**

(b) Explain the concept of "beating the market". What does the Efficient Market Hypothesis imply about the possibility of "beating the market"? **[6 Marks]**

(c) In connection with stock exchange investments, write brief notes on the following:

(i) Fundamental analysis **[4 Marks]**

(ii) Market analysis **[4 Marks]**

(iii) Chartism. **[4 Marks]**

[TOTAL 25 MARKS]

QUESTION 6

Kimberly-Clark, a household product manufacturer, reported earnings per share of $3.20 in 1993 and paid dividends per share of $1.70 in that year. The firm reported depreciation of $315 million in 1993 and capital expenditures of $475 million. There were 160 million shares outstanding, trading at $51 per share. This ratio of capital expenditures to depreciation is expected to be maintained in the long term. The debt outstanding is $1.6 billion. Earnings per share are expected to grow 7% per year. The stock had a beta of 1.05 and the Treasury bill rate is 6.25%.

Required:

(a) Calculate the value per share, using the Dividend Discount Model **[9 Marks]**

(b) Calculate the value per share, using the Free Cash-flow approach **[9 Marks]**

(c) How would you explain the difference between the two models, and which one would you use as your benchmark for comparison to the market price? **[7 Marks]**

[TOTAL 25 MARKS]

END OF EXAMINATION