National University of Science and Technology

Think in Other Terms

FACULTY OF COMMERCE

DEPARTMENT OF FINANCE

BACHELOR OF COMMERCE HONOURS DEGREE IN FINANCE

RISK MANAGEMENT [CFI 4204]

FINAL EXAMINATIONS MAY 2012

TIME ALLOWED: 3 HOURS

INSTRUCTIONS TO CANDIDATES

1. Answer any **FOUR (4)** questions
2. Show **ALL** calculations

INFORMATION TO CANDIDATES

1. The businesses in this question paper are intended to be fictitious
2. The paper contains **SIX (6)** questions.
3. Marks are given in square brackets.
4. All questions carry 25 marks each

QUESTION ONE

Mr. M. W. Ndlovu has a $100 000 equity portfolio which he wants to protect from falling below this value, but he does not want to forego the chance of benefiting if the portfolio rises above this level. Suppose it is known that the portfolio value can rise to $112 000 or fall to $91 000 after six months. Furthermore, if it rises to $112 000, then after another six months the portfolio value will be either $125 000 or $100 000. If the portfolio value had fallen to $91 000, then after a year it could have risen to $100 000 or fallen to $78 000.

Assume the following:

- Transaction costs are zero,
- There are no futures markets,
- Security price movements are continuous, and
- The semi-annual risk free interest rate is 5%.

Required

(a) Illustrate how you would use dynamic asset allocation to insure this portfolio to meet Mr. Ndlovu's goal. Show **all** steps. (16 marks)

(b) Briefly explain another strategy that replicates the outcome of the strategy in (a) above. (5 marks)

(c) In the real world, what factors are likely to complicate the hedging strategy in (a) above? (4 marks)

[TOTAL 25 MARKS]

QUESTION TWO

(a) "As the centrepiece for capital regulation to avoid crises, the Basel approach has failed in its first and second formulations and the world is still dealing with the after effects of the greatest financial crisis since the Great Depression. As a testimony of the failure, Basel III is on the horizon". Examine this statement. (12 marks)

(b) The following information about Bank HD, which has four business lines, is available:

Business Line	Beta Factor	Gross Income
1	1.15	200 000
2	1.03	500 000
3	1.17	100 000
4	1.20	700 000

Required

Using Basel II's Operational Risk Standardised Approach, calculate the bank's operational risk charge. (4 marks)

c) Critically analyse the reasons for ex-ante and ex-post risk adjustment of returns and performance. (9 marks)

[TOTAL 25 MARKS]

QUESTION THREE

(a) Suppose it is 1 April and a UK fund manager is expecting a dividend payment of $3 million from his investments in the USA on 1 June. The dividends will be repatriated immediately and the fund manager is concerned that sterling will rise against the dollar between now and 1 June. Suppose that on 1 April the spot exchange rate is $1.75/£ and June LIFFE futures price is $1.77/£.

Required

i. If the manager decides to use sterling currency futures contracts to hedge her position, what action should she take? (3 marks)

ii. Calculate the number of futures contracts required to hedge this position. (6 marks)

iii. Calculate the hedge efficiency if the spot exchange rate on 1 June rises to $1.82/£ and the futures price also rises to $1.85/£ (6 marks)

(b) Evaluate the criteria used by hedgers in deciding whether to use options or futures contracts in hedging their exposures. (10 marks)

[TOTAL 25 MARKS]

QUESTION FOUR

(a) "The fact that we have a vibrant internal audit unit means that we do not need a separate risk management unit", said Mrs V. Ncube, CFO of Fiduciary Bank. Discuss the comment made by Mrs Ncube. (10 marks)

(b) Evaluate the importance of risk appetite in the risk management process. (10 marks)

(c) It is a well documented fact that risk is not additive. Explain how this knowledge helps in managing financial risk. (5 marks)

[TOTAL 25 MARKS]

QUESTION FIVE

(a) Mr. Smith wants to use perturbation analysis to hedge a Treasury 13.5% 2004-08 bond which has a price factor of 1.3914412 and was trading at £126.25 on 1 June. Suppose that when interest rates rise by half a percentage point the price of the CTD bond falls by £2 and the price of the bond to be hedged falls by £2.50. Calculate the perturbation hedge ratio and comment on what it means in relation to the bond's volatility. (5 marks)

(b) An investor in the UK holds a portfolio in the USA that is valued at $1 million on 1 July. The spot exchange rate is $1.59/£ and the three month forward rate is $1.65/£. Suppose that the investor decides to hedge half the portfolio against a rise in sterling over the next three months using currency options contracts.

Required

i. Calculate the number of contracts required to hedge the position. (5 marks)
ii. If the option premium is 3.5 cents per pound, calculate the total cost of the contracts. (5 marks)

(c) With the aid of a diagram, explain how you would use a put option to insure a $1 million portfolio for one year. Assume a premium of 5% of the portfolio value. (10 marks)

[TOTAL 25 MARKS]

QUESTION SIX

(a) Analyse the sources of interest rate risk. (12 marks)

(b) Evaluate the importance of asset and liability management to banks. (9 mars)

(c) ' In a fixed rate universe, any liquidity gap generates interest rate risk'. Explain this statement. (4 marks)

[TOTAL 25 MARKS]

END OF EXAMINATION PAPER