NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF COMMERCE

DEPARTMENT OF BANKING

BACHELOR OF COMMERCE HONOURS DEGREE IN BANKING

DERIVATIVE SECURITIES
[CBA 4204]

SUPPLEMENTARY EXAMINATION JULY 2012

TIME: 3 HOURS

INSTRUCTIONS TO CANDIDATES

- Answer any **FOUR (4)** questions.
- Start the answer to each full question on a fresh page of the answer sheet.
- Indicate on your answer booklet whether you are in the conventional or parallel programme.
- Show all workings.

INFORMATION FOR CANDIDATES

- The paper contains **SIX (6)** questions.
- All questions carry equal marks **[25 marks].**
- The businesses in this question paper are intended to be fictitious.

This paper consists of 5 printed pages.

QUESTION 1

With the aid of clearly labeled expiry pay-off diagrams, describe each of the following option trading strategies. Comment briefly on what each of these strategies mean on the market.

a) Straddle [5 marks]
b) Strip [5 marks]
c) Strap [5 marks]
d) Strangle [5 marks]
e) Bull Spreads [5 marks]

QUESTION 2

a) Discuss the significance of marking-to-market and margin payments in futures markets. [6 marks]
b) The futures price of one unit of a commodity is $1000, initial margin level is 20% and the maintenance margin level is $150.

DAY	PRICE
1	$1100
2	$1200
3	$1050
4	$950
5	900

You are further told that the loser's margin account will be debited up to maintenance level and for any further losses, a variation margin in cash will be called for. Calculate the initial margin, variation margin, margin account balance, and the net gain/loss on a daily basis for both the buyer and the seller. Tabulate your answers. [12 marks]

c) Suppose you call your broker and issue instructions to sell one July silver futures contract. Describe the steps the broker would take to enter into the contract. [7 marks]

QUESTION 3

a) A $100 million interest rate swap has a remaining life of 10 months. Under the terms of the swap, six-month LIBOR is exchanged for 12% per annum (compounded semi-annually). The average of the bid-offer rate being exchanged for six-month LIBOR in swaps of all maturities is currently 10% per annum with continuous compounding. The six-month LIBOR rate was 9.6% per annum two months ago.
   i) What is the current value of the swap to the party paying floating? [7 marks]
   ii) What is the value of the swap to the party paying fixed? [6 marks]
b) Explain why a bank is subject to credit risk when it enters into two offsetting swap contracts. [6 marks]
c) Explain the relationship between swap rates and par yields. [6 marks]

QUESTION 4

a) "When a futures contract is traded on the floor of the exchange, it may be the case that the open interest increases by one, stays the same, or decreases by one." Explain this statement. [9 marks]

b) A company has a $20 million portfolio with a beta of 1.2. It would like to use futures contracts on the S&P 500 to hedge its risk. The index is currently standing at 1080, and each contract is for delivery of $250 times the index.

   i) What is the hedge that minimizes risk? [7 marks]

   ii) What should the company do if it wants to reduce the beta of the portfolio to 0.6? [9 marks]

QUESTION 5

a) "If most of the call options on a stock are in the money, it is likely that the stock price has risen rapidly in the last few months." Discuss this statement. [10 marks]

b) Explain why the arguments leading to put – call parity for European options cannot be used to give a similar result for American options. [10 marks]

c) The price of a non-dividend paying stock is $19 and the price of a three-month European call option on the stock with a strike of $20 is $1. The risk-free rate of interest is 4% per annum. Calculate the price of a three-month European put option with a strike price of $20. [5 marks]

QUESTION 6

Evaluate the implied benefits and risks of derivative securities for an emerging financial market such as Zimbabwe. [25 marks]