BINDURA UNIVERSITY OF SCIENCE EDUCATION

FACULTY OF COMMERCE

DEPARTMENT OF BANKING AND FINANCE

DERIVATIVE SECURITIES (BS241)

3 HOURS (100 Marks)

APR 2025

INSTRUCTIONS TO CANDIDATES
1. Answer any four questions.
2. All questions carry equal marks.
3. Credit will be given for grammatically well-constructed answers.

1. a) Entity Z enters into a floating price forward contract to purchase 800,000 liters of crude oil in six months, with the contract allowing for either physical delivery or cash settlement based on the change in the fair value of oil. Discuss whether this contract qualifies as a derivative.
(5 Marks)

b) Explain how interest rate swaps can be utilized by corporations to manage interest rate risk in their debt portfolios. Provide relevant examples to support your answer.
(20 Marks)
[25 Marks]

2. a) On July 1, 20X3, a company enters into a forward contract to purchase raw materials from a foreign supplier for FC 75,000, with delivery scheduled for December 31, 20X3. The company also enters into a forward exchange contract to sell FC 75,000 and receive LC 82,000 on the same date. Explain the rationale behind entering into the forward exchange contract.
(4 Marks)

b) Identify the hedging instrument in this situation and explain how it works.
(4 Marks)

c) Discuss how an investor can use a put option to hedge against the risk of declining stock prices for 500 shares valued at Rs. 700 each, assuming the price is expected to drop within the next six months.
(17 Marks)
[25 Marks]

3. a) Compare and contrast the use of options and futures in hedging foreign exchange risk, particularly in volatile markets.
(6 Marks)

b) Explain the primary differences between forward contracts and futures contracts, with a focus on how each can be used for risk management in agricultural markets.
(8 Marks)

c) A forward contract on a non-dividend-paying stock matures in five months. The current stock price is $50, and the five-month risk-free interest rate is 6%.

i) Calculate the delivery price in a forward contract negotiated today. (6 Marks)

ii) Describe the potential actions an investor might take if the forward price is lower than the delivery price. (5 Marks)

[25 Marks]

4. a) Calculate the price of a European call option on a non-dividend-paying stock where the current stock price is $48, the strike price is $46, the risk-free interest rate is 10% per annum, the volatility is 28% per annum, and the time to maturity is four months. (10 Marks)

b) A company has issued a 7 million FC five-year bond, with the principal payable at maturity in three years. The company enters into a currency swap for the notional value of 7 million FC, agreeing to make payments in LC and receive FC at the bond's maturity date. Describe the hedge relationship and explain how it mitigates risk. (15 Marks)

[25 Marks]

5. a) A forward contract on a non-dividend-paying stock matures in two months. The current stock price is $55, and the two-month risk-free interest rate is 2%.

i) Determine the delivery price in the forward contract if negotiated today. (5 Marks)

ii) What should the investor do if the forward price is less than the delivery price? (5 Marks)

b) Discuss the potential uses and benefits of derivative instruments in managing risk for financial institutions, particularly in the context of interest rate volatility. (15 Marks)

[25 Marks]

6. a) Provide five examples of real options embedded in a high-tech startup's business plan, focusing on options that could influence investment decisions. (10 Marks)

b) Describe the differences between standardized futures contracts and over-the-counter (OTC) derivative contracts, highlighting the advantages and disadvantages of each. (4 Marks)

c) Under what market conditions would a company opt for a long hedge strategy versus a short hedge strategy in derivatives trading? (4 Marks)

d) Explain the factors that contribute to an American option having a higher value than a European option on the same underlying asset, with the same strike price and maturity date. (7 Marks)

[25 Marks]

END OF PAPER