Total No. of printed pages = 4

BA 17240 F 2

01/07/22

Roll No. of candidate | | | | | | | | | | |

2022

M.B.A. 4th Semester End-Term Examination

FINANCIAL ENGINEERING AND DERIVATIVES MANAGEMENT

(New Regulation)

Full Marks – 70 Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer Question No. 1 and any *four* from the rest.

1. Choose the correct answer : (10 × 1 = 10)

(i) A disadvantage of a forward contract is that

(a) It may be difficult to locate a counter party

(b) The forward market suffers from lack of liquidity

(c) These contracts have default risk

(d) All of the above

(ii) A long contract requires that the investor to

(a) Sell securities in the future

(b) Buy securities in the future

(c) Hedge in the future

(d) Close out his position in the future

(iii) If you were a farmer growing crops for market, how would you hedge your risk?

(a) By taking contracts to sell at a pre-agreed forward price

(b) By taking contracts to buy at a pre-agreed forward price

(c) By taking contracts to sell at the spot price

(d) By taking contracts to buy at the spot price

[Turn over

(iv) On the expiration date of a futures contract, the futures price

(a) always equals the purchase price of the contract

(b) always equals the average price of the asset over the life of the contract

(c) always equals the price of the underlying asset

(d) always equals the average of the purchase price and the price of underlying asset

(v) The system of daily settlement in the future market is

(a) Marking to market

(b) Market making

(c) Market backwardation

(d) Market moving

(vi) Options are contracts that give the purchasers the

(a) Option to buy or sell an underlying asset

(b) The obligation to buy or sell an underlying asset

(c) The right to hold an underlying asset.

(d) The right to switch payment streams

(vii) An option that can be exercised ONLY at the time of maturity is called a(n)

(a) Swap

(b) Stock option

(c) European option

(d) American option

(viii) Which of the following best describes the term "spot price"?

(a) The price for immediate delivery

(b) The price for delivery at a future time

(c) The price of an asset that has been damaged

(d) The price of renting an asset

(ix) A company knows it will have to pay a certain amount of a foreign currency to one of its suppliers in the future. Which of the following is TRUE?

(a) A forward contract can be used to lock in the exchange rate

(b) A forward contract will always give a better outcome than an option

(c) An option will always give a better outcome than a forward contract

(d) An option can be used to lock in the exchange rate

(x) Rolling the hedge forward in a futures contract means that

(a) Keep all futures contracts open

(b) Close one futures contract and take a position in a contract with a later delivery date

(c) Delivery dates in a futures contract do not matter

(d) Choose the same delivery date

2. (a) Explain the difference between hedging, speculation and arbitrage. Can a forward contract be used for hedging as well as for speculation? Elaborate. (3 + 5 = 8)

(b) 'A perfect hedge may not always lead to a better outcome than an imperfect hedge'. Do you agree? Justify your answer with a suitable example. (7)

3. (a) Distinguish between a forward and a futures contract. (5)

(b) What is cross hedging? How do you calculate the minimum variance hedge ratio? (2 + 1 = 3)

(c) The price of a European call that expires in six months and has a strike price of \$30 is \$2. The underlying stock price is \$29 and a dividend of \$0.50 is expected in two months and again in five months. The term structure is flat, with all the risk-free interest rates being 10 per cent. What is the price of a European put option that expires in six months and has a strike rate of \$30? (7)

4. (a) Distinguish between investment and consumption assets. (3)

(b) What do you mean by forward price? Does the value of the forward contract remain unchanged over its entire life? If so, why? (2 + 3 = 5)

(c) The spot price of silver is \$9 per ounce. The storage costs are \$0.24 per ounce per year payable quarterly in advance. Assuming that interest rates are 10 per cent per annum for all maturities, calculate the futures price of silver for delivery in 9 months. (7)

5. (a) Explain the role of banks in arranging a swap deal between companies. (3)

(b) British Fortune Inc. wants to borrow USD at a fixed rate of interest while American Pride Inc. wishes to borrow GBP at a fixed rate of interest. The

Companies	GBP	USD
British Fortune Inc.	5.0%	9.6%
American Pride Inc.	6.5%	10.6%

Design a swap that will net a bank, acting as an intermediary, 50 basis points per annum. Make the swap equally attractive to the two companies and ensure that all foreign exchange risk is assumed by the bank. (12)

6. (a) A stock price is currently \$100. Over the next two 6-months, it is expected to go up by 10% or down by 10%. The risk-free interest rate is 8 per cent per annum with continuous compounding. What is the value of 1-year American call option with a strike price of \$100? Also explore the possibility of early exercise. (15)

OR

(b) Calculate the price of a 3-month European put option on a dividend paying stock with a strike price of \$50 when the current stock price is also \$50. A dividend of \$1.50 on the stock is expected in two months. The risk-free interest rate is 10% per annum for all maturities and the volatility is 30% per annum. (15)

7. Write notes on (any *three*) : $(3 \times 5 = 15)$

(a) Long and short hedges

(b) New financial product development process

(c) Caps, Floors and Collars

(d) Black Scholes Merton Stock option pricing Model

(e) European Vs. American Options