Total No. of printed pages = 4

BA 17240F2

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

2020

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

FINANCIAL ENGINEERING AND DERIVATIVES MANAGEMENT

(New Regulation)

Full Marks – 50 Time – Two hours

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

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

1. Fill up the blanks (any five) : $(5 \times 1 = 5)$

   (i) A trader is _____ when she has an exposure to the price of the asset and takes a position in a derivative to offset the exposure.

   (ii) In _____ contracts, delivery or final cash settlement usually takes place.

   (iii) A perfect hedge completely eliminates _____.

   (iv) A(n) _____ is an asset that is held for investment by significant numbers of investors.

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(v) The benefits of holding the physical asset are referred to as the _____ provided by the commodity.

(vi) A _____ is an agreement between two companies/parties to exchange cash flows in the future.

(vii) The average of the bid and offer fixed rates is known as the _____.

(viii) A _____ gives the holder the right to buy an asset by a certain date for a certain price.

(ix) Binomial tree is popularly used to price _____.

(x) A _____ is a combination of cap and floor.

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

(b) Discuss the specifications of a futures contract. (5)

(c) 'Futures contracts virtually carry no credit risk'. Do you agree? Why? (5)

3. (a) How does a short hedge differ from a long hedge and also explain under what circumstances are (i) a short hedge and (ii) a long hedge appropriate? (5)

(b) 'Hedging can sometimes lead to worse outcome'. Do you agree? Explain with suitable example. (5)

(c) 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 futures is currently standing at 1080 and each contract is for the delivery of $250 times the index. (3 + 2 = 5)

(i) What is the hedge that minimises the risk?

(ii) What should be the strategy if the company wants to increase the beta of the portfolio to 2.0?

4. (a) Discuss the meaning of the terms - convenience yield and cost of carry. What is the relationship between futures price, spot price, convenience yield and cost of carry? (5)

(b) Explain the difference between the forward price and the value of a forward contract? (3)

(c) A one-year long forward contract on a non-dividend paying stock is entered into when the stock price is $40 and the risk-free rate of interest (with continuous compounding) is l0% per annum. (3 + 4 = 7)

(i) Find out the forward price and the initial value of the forward contract.

(ii) Six month later the price of the stock is $45 and the risk-free interest rate is still l0%. If it is so, determine the forward price and the value of the forward contract.

5. (a) Define swaps. How are interest rate swaps valued? (2 + 3 = 5)

(b) Companies XYZ and PQR have been offered the following rates per annum on a Rs. 20 million loan for 5 years – (10)

Companies	Fixed Rtes	Floating Rates
XYZ	5.0%	LIBOR + 0.1%
PQR	6.4%	LIBOR + + 0.6%

Company XYZ requires a floating rate loan and Company PQR requires a fixed-interest rate loan. Design a swap that will net a bank, acting as an intermediary, 0.1% per annum and that will appear equally attractive to both the companies.

6. (a) Distinguish between European and American option contracts. (2)

(b) Explain why an American option is always worth at least as much as its intrinsic value. (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 risk-free interest rates being 10%. What is the price of a European put option that expires in six months and has a strike price of \$30? (10)

7. (a) A stock price is currently \$50. Over each of the next two three-month periods it is expected to go up to 6 percent or down by 5 per cent. The risk-free interest rate is 570 per annum with continuous compounding. What is the value of a six-month American call option with the strike price of \$51? Also suggest if it would be optimal to exercise it early at any node of the tree? (15)

Or

(b) Write short notes on (any Three) : $(3 \times 5 = 15)$

(i) Futures products in India

(ii) The role of Financial Institutions in swaps

(iii) The process of designing and testing of new financial product

(iv) Caps, Floors and Collars.