

Name:

Enrolment No:



**UNIVERSITY OF PETROLEUM & ENERGY STUDIES**

**End Semester Examination – December, 2021**

**Program: B.Com (Hons)**

**Semester: 3**

**Subject/Course: Introduction to Derivatives**

**Max. Marks: 100**

**Course Code: FINC 3017**

**Duration: 3 Hours**

**Part A: Answer ALL questions**

**Question 1.** Identify the following statements as True or False: ( $2 \times 5 = 10$  Marks) [CO 1]

- a) An arbitrageur is an individual who uses the derivatives markets primarily for price risk management of assets and portfolios.
- b) An option contract gives the buyer (holder) a right but not an obligation to buy or sell an asset in future.
- c) Futures contracts have a very high counterparty risk.
- d) Forward contracts are known to be illiquid.
- e) In a futures contract, the quantity of the underlying (Contract Size) is standardized.

**Question 2:** Answer the following questions ( $2 \times 5 = 10$  Marks) [CO 2]

- a) The amount paid by a trader when he/she first enters into a futures contract is called:  
(Choose the right answer)
  - i. Maintenance margin
  - ii. Initial margin
  - iii. Marked-to-market (variance) margin
  - iv. None of the above
- b) A trader takes a long position in one Co. X futures contract (lot size is 100 shares) at a price of ₹150 per share and deposits ₹15,000 as initial margin. If the futures price becomes ₹155 per share the very next day, the margin balance: (Choose the right answer)
  - i. Decreases by ₹500
  - ii. Remains unchanged

- iii. Increases by ₹500
- iv. Data insufficient
- c) A ..... position in a futures can be squared-off (closed out) by taking a ..... position in the same contract. (*Choose the right answer*)
  - i. Long, Short
  - ii. Short, Long
  - iii. Neither i nor ii
  - iv. Both i and ii
- d) If you invest your money in a fixed deposit that pays 7.1% per annum compounded quarterly, your effective rate of interest per annum would be ..... (*Fill in the blank with the correct answer*)
- e) If you invest your money in a deposit that claims to pay 6% per annum compounded continuously, the effective rate interest per annum would be..... (*Fill in the blank with the correct answer*)

**Part B: Answer ALL questions**

**Question 3.** In very brief, explain the “Carry Pricing Model” of forward (or futures) contract. (5 Marks) [CO 4]

**Question 4.** A farmer is apprehensive about fall in prices of his produce and enters into a forward contract with a wholesaler to sell 1000 kg of wheat at a price of ₹15 per kg after one month. Determine the outcome of this contract for the farmer and the wholesaler if price after one month is: a) ₹12 per kg, b) ₹17 per kg. (5 Marks) [CO 3]

**Question 5.** Appraise in your own words the role of a ‘trading member’ in the futures and options trading system in NSE. (5 Marks) [CO 4]

**Question 6.** If a bank pays 7.5% per annum interest compounded continuously on deposits. But, the bank actually pays interest in two frequencies: a) semi-annually, b) quarterly, as per the choice of customer. Determine the interest paid on a deposit of ₹25,000 to a customer for each semi-annual and quarter. (5 Marks) [CO 2]

**Part C: Answer ALL questions. Question 9 has internal choice.**

**Question 7.** Mr. Q takes a short position today in 10 GBP (British Pound) contracts expiring in September at ₹101.54 per GBP. The lot size is GBP1000. Initial margin requirement is ₹2600 per contract. Maintenance margin level is 75% of initial margin. [CO 3]

- a) What is the total initial margin deposited by Mr. Q? (3 Marks)
- b) What is the maintenance margin level for her? (3 Marks)
- c) What change in the price of GBP will lead to a margin call? (4 Marks)

**Question 8.** A trader who has recently invested in 200 Co. AYZ shares at a price of ₹234.5 per share is apprehensive that the price of the shares will soon fall by end of the month. The trader notices a futures contract available on Co. AYZ expiring in one month, available at ₹236.75 per share, the lot size is 200 shares. Advise the trader on using the futures contract to hedge the risk of fall in prices. Determine the outcome of the hedge if price at the end of the month is a) ₹218.35 b) ₹249.20. (10 Marks) [CO 3]

**Question 9.** Answer any one of the below:

**Question 9-A.** Shares of Co. Z are available at a price of ₹1,800 today. The company will pay dividends of ₹20 per share after 1-month and 3-months each. What is the fair value of a 3-months futures contract to be released on Co. Z today if the risk free rate is 6% per annum compounded continuously. (10 Marks) [CO 4]

**Or,**

**Question 9-B.** The spot rate of Gold is ₹48,500 per 10-grams today. Determine the fair value of gold futures expiring in 3-months. Given that the storage cost of 10 grams of gold is ₹105 to be paid at the end of 3-months. Risk free rate is currently 6% per annum compounded continuously. (10 Marks) [CO 4]

**Part D: Answer ALL questions. Question 11 has internal choice.**

**Question 10.** Determine the price of new a 2-months futures contract on NIFTY index which is at a level of 20,000 currently with the following information: (15 Marks) [CO 4]

- Co. XYZ shares have 8% share in NIFTY is going to pay a dividend of ₹20 per share in 15-days. Price of XYZ is ₹800 per share.
- A single NIFTY futures is for 100 units of NIFTY
- Risk free rate is currently 6% per annum compounded continuously.

**Question 11.** Answer any one of the following

**Question 11-A.** Assume you are a trader in derivatives markets who has a new client. Explain the following derivatives trading order conditions to your client in simple words: [CO 4]

- a) A day order (3 Marks)
- b) Stop-loss order (6 Marks)
- c) Market order (3 Marks)
- d) Immediate-or-cancel (IOC) order (3 Marks)

**Or,**

**Question 11-B.** Co. XBI's shares are currently trading at ₹455.50. The 91-day T-Bill rate is 3.3% per annum compounded continuously. A futures contract on XBI shares has 1500 shares of XBI. [CO 4]

- a) Find the theoretical futures contract price on XBI's shares maturing in 1-month. XBI will not pay dividends in 1-month (3 Marks)
- b) What will you do if actual 1-month futures price is ₹490? (6 Marks)
- c) What will you do if 1-month futures price is ₹425? (6 Marks)