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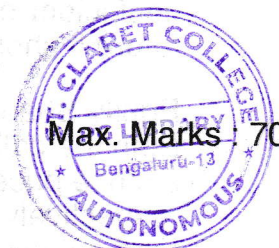
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**IV Semester M.B.A. (Day & Eve.) Examination, November/December 2025  
(CBCS – 2022-23 and Onwards)**

**MANAGEMENT**

**4.2.3 : Risk Management and Derivatives**

Time : 3 Hours



**SECTION – A**

Answer **any five** of the following. **Each** question carries **five** marks.

**(5×5=25)**

1. What are derivatives and why are they essential in modern financial markets ?
2. Define the strip strategy and describe why an investor might choose this strategy over a straddle.
3. Calculate the value of three month at the money European call option on stock index when the index is at 250, risk free interest rate is 10% per annum, volatility of index is 18% per annum and dividend yield on the index is 3 % per annum. Use Black and Scholas Model.
4. On Tuesday morning (before opening of the capital market) an investor, while going through his bank statement, has observed that an amount of Rs. 7 Lakhs is lying in his bank account. This amount is available for use from Tuesday till Friday. The Bank requires a minimum balance of Rs. 1,000 all the time. The investor desires to make a maximum possible investment where Value at Risk (VaR) should not exceed the balance lying in his bank account. The standard deviation of market price of the security is 1.5 per cent per day. The required confidence level is 99 per cent (Z score = 2.33). You are required to determine the maximum possible investment.
5. On 31/08/2021, the value of stock index was Rs. 2,200, the risk-free rate of return has been 8% per annum, the dividend yield on this stock is as given below.

Month	Dividend Paid	Month	Dividend Paid
January	3%	July	3%
February	4%	August	4%
March	3%	September	3%
April	3%	October	3%
May	4%	November	4%
June	3%	December	3%

Assuming that interest is continuously compounded daily, find out the future price of contract deliverable on 31/12/2021. Given  $e^{0.01583} = 1.01593$ .

P.T.O.



6. 'A' Ltd. is long on 10 Metric ton of copper at Rs. 474 per kg (Spot) and intends to remain so for the ensuring quarter. The standard deviation of changes of its spot and future prices are 4% and 6% respectively, having correlation coefficient of 0.75. What is the hedge ratio ? What is the amount of copper future it should short to achieve perfect hedge ?
7. Equity Shares of Asha Ltd., are being currently sold for Rs. 90 per share. Both the call option and the put option for a 3-month period are available for a strike price of Rs. 97 at a premium of Rs. 3 per share and Rs. 2 per share respectively. An investor wants to create a straddle position in this share. Find out his net pay-off at the expiration of the option period, if the share price on that day happens to be Rs. 90 or Rs. 105.

### SECTION – B

Answer **any three** questions. **Each** question carries **10** marks.

**(3×10=30)**

8. Explain how the price of a commodity futures contract is determined. What factors influence commodity futures prices ?
9. Consider the following data relating to KM stock. KM has a beta of 0.8333 with NIFTY. Each NIFTY contract is equal to 200 units. KM now quotes at Rs. 150 and the NIFTY future is 1500 index points. You expect the prices to fall and have gone short on 1200 shares of KM in the spot market.
  - i) How many futures contracts will you have to take ?
  - ii) Suppose the index rises by 10%, how are you protected ?
  - iii) Suppose the index falls by 5%, what will happen ?
10. Meera hopes that the price of AB Ltd., will fall after three months. Therefore, she purchases a put option on share with a maturity of three months at a premium of Rs. 5. The exercise price is Rs. 30. The current market price of AB Ltd., share is Rs. 28. How much is profit or loss of Meera and the Put seller if the price of the share at the time of maturity of the option turns out to be Rs. 18, or Rs. 25 or Rs. 28 or Rs. 30 or Rs. 40 ? What is the pay-off of the seller of put option ? Draw the pay-off diagram.
11. Mr. P established the following spread on the Coastal Corporation's stock :
  - i) Purchased one 3-month call option with a premium of Rs. 6.50 and an exercise price of Rs. 110.
  - ii) Purchased one 3-month put option with a premium of Rs. 10 and an exercise price of Rs. 90.
 Coastal Corporation's stock is currently selling at Rs. 100.
  - a) Determine profit or loss, if the price of Coastal Corporation's stock : Remains at Rs. 100 after 3 months.
  - b) Falls at Rs. 70 after 3 months.
  - c) Rises to Rs. 138 after 3 months.
 Assume the size of option is 1000 Shares of Coastal Corporation.





SECTION – C

12. **Compulsory** question.

(1×15=15)

The following data relate to A Ltd. 's Portfolio :

Shares	X Ltd.	Y Ltd.	Z Ltd.
Number of shares (in lakhs)	6	8	4
Price per share (Rs.)	1,000	1,500	500
Beta	1.50	1.30	1.70

The CEO is of the opinion that the risk of the portfolio is very high as compared to the market risk and hence interested to reduce the Portfolio's systematic risk to 0.95. Treasury Manager has suggested two below mentioned alternative strategies :

Dispose of a part of the existing portfolio to acquire risk-free securities, or Take appropriate position on Nifty Futures, currently trading at 8250 and each Nifty points multiplier is Rs. 210.

You are required to :

- Interpret the opinion of CEO, whether it is correct or not.
- Calculate the existing systematic risk of the portfolio.
- Advise the value of risk-free securities to be acquired.
- Advise the number of shares of each company to be disposed off.
- Advise the position to be taken in Nifty Futures and determine the number of Nifty contracts to be bought/sold.
- Calculate the new systematic risk of the portfolio if the company has taken position in Nifty Futures and there is 2% rise in Nifty.

**Note** : Make calculations in Rs. lakh and upto 2 decimal points.

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