



10904



I Semester M.B.A. Degree Examination, July 2022  
(CBCS Scheme)  
**MANAGEMENT**  
Paper – 1.4 : Statistics for Management

Time : 3 Hours

Max. Marks : 70

## SECTION – A

Answer **any five** questions. **Each** question carries **five** marks :**(5×5=25)**

1. Explain the concepts of skewness and kurtosis with illustrations.
2. Fit a straight-line trend by the method of least squares for the following data.  
Also estimate the sales for the year 2022 :

| Year                 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|----------------------|------|------|------|------|------|------|
| Sales (Rs. in lakhs) | 3    | 8    | 7    | 9    | 11   | 14   |

3. From the following data, compute Pearson's correlation coefficient. Also find the probable error and discuss the significance of correlation :

|        |    |    |    |    |    |
|--------|----|----|----|----|----|
| Price  | 10 | 12 | 14 | 15 | 19 |
| Demand | 40 | 41 | 48 | 60 | 50 |

4. 1,000 students at college level were graded according to their I.Q. and the economic conditions of their homes. Use 5% level of significance to test whether there is a relationship between economic conditions at home and I.Q.

| Economic Conditions | IQ   |     |       |
|---------------------|------|-----|-------|
|                     | High | Low | Total |
| Rich                | 460  | 140 | 600   |
| Poor                | 240  | 160 | 400   |
| Total               | 700  | 300 | 1,000 |

5. A committee is to be constituted by selecting three people at random from a group consisting of 5 Economists and 4 Statisticians. Find the probability that the committee will consist of :
  - a) 3 Economists
  - b) 3 Statisticians.
6. What is Probability Sampling ? Explain about different types of probability sampling.

P.T.O.



7. A sales manager wants to know whether a special promotional campaign is a success. Following table depicts the data. Test at 5% level of significance, whether it is a success :

| Retail Outlets        | 1   | 2   | 3   | 4   | 5   |
|-----------------------|-----|-----|-----|-----|-----|
| Sales before campaign | 110 | 120 | 123 | 132 | 125 |
| Sales after campaign  | 120 | 118 | 125 | 136 | 121 |

## SECTION – B

Answer any three questions. Each question carries ten marks : (3×10=30)

8. Compute Laspeyre's, Paasche's and Fisher's price index number for 2021 and prove that Fisher's price index number satisfies the time and factor reversal tests :

| Commodity | 2020        |                | 2021        |                |
|-----------|-------------|----------------|-------------|----------------|
|           | Price (Rs.) | Quantity (Kg.) | Price (Rs.) | Quantity (Kg.) |
| A         | 15          | 12             | 20          | 18             |
| B         | 18          | 15             | 23          | 19             |
| C         | 10          | 14             | 14          | 17             |
| D         | 20          | 19             | 25          | 23             |
| E         | 16          | 20             | 19          | 21             |

9. The customer accounts of a certain departmental store have an average balance of Rs. 1,200 and a standard deviation of Rs. 400. Assuming that the account balances are normally distributed.
- What percentage of the accounts is over Rs. 1,500 ?
  - What percentage of the accounts is between Rs. 1,000 and Rs. 1,500 ?
  - What percentage of the accounts is below Rs. 2,000 ?
  - What is the probability that the accounts are between Rs. 800 and Rs. 1,600 ?
10. A manufacturing company has to select one of the two products A or B for manufacturing. Product A requires investment of Rs. 20,000 and product B Rs. 40,000. Market research survey shows high, medium and low demands with corresponding probabilities and returns from sales in Rs. Thousand for the two products in the following table :

| Market demand | Probability |     | Return from sales |    |
|---------------|-------------|-----|-------------------|----|
|               | High        | 0.4 | 0.3               | 50 |
| Medium        | 0.3         | 0.5 | 30                | 60 |
| Low           | 0.3         | 0.2 | 10                | 50 |

Construct an appropriate decision tree. What decision the company should take ?



11. Following information is obtained from the records of a business organization :

|  |    |    |    |    |    |    |    |    |
|--|----|----|----|----|----|----|----|----|
| <b>Sales (in '000)</b>                 | 91 | 53 | 45 | 76 | 89 | 95 | 80 | 65 |
| <b>Advertisement Expense (in '000)</b> | 15 | 8  | 7  | 12 | 17 | 25 | 20 | 13 |

You are required to :

- i. Compute regression coefficients
- ii. Obtain the two regression equations and,
- iii. Estimate the advertisement expenditure for a sale of Rs. 1,20,000.

**SECTION – C  
(Compulsory)**

12. Case study :

**(1×15=15)**

The following data presents the number of units of production per day turned out by 5 different workers using 4 different types of machines :

| <b>Workers</b> ↓ | <b>Machine Type</b> |          |          |          |
|------------------|---------------------|----------|----------|----------|
|                  | <b>A</b>            | <b>B</b> | <b>C</b> | <b>D</b> |
| 1                | 44                  | 39       | 45       | 36       |
| 2                | 46                  | 40       | 52       | 43       |
| 3                | 36                  | 37       | 44       | 32       |
| 4                | 43                  | 38       | 46       | 33       |
| 5                | 38                  | 42       | 49       | 39       |

At 5% level,

- a) Test whether the mean production is the same for the different machine types.
  - b) Test whether the 5 workers differ with respect to mean production.
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