

MBA 1st Semester Examination, 2024

MBA

(Statistics for Business Decisions)

PAPER – MBA-103

Full Marks : 100

Time : 3 hours

Answer all questions

The figures in the right hand margin indicate marks

*Candidates are required to give their answers in
their own words as far as practicable*

GROUP – A

Answer any *eight* questions from the following :

5 × 8

- 1. Discuss various types of measurement scales with suitable examples.**

(Turn Over)

2. Establish the relation between correlation coefficient and regression coefficient.
3. Find the mean and SD of 'n' natural numbers.
4. From the following information, determine in which firm, X or Y, there is greater consistency in individual wages.

Particulars	Firm X	Firm Y
Average monthly wages	Rs. 50	Rs. 45
Variance of distribution of wages	121	144

5. Explain any five features in designing a questionnaire for the purpose of data collection. 2 + 3
6. "Correlation does not deal with causation". Explain the statement.

7. Explain the concept of classical approach of probability. Mention the shortcomings of this approach. 2 + 3
8. One bag contains 4 white and 2 black balls. Another contains 3 white and 5 black balls. If one ball is drawn from each bag, find the probability that (a) both are white, (b) both are black, and (c) one is white and one is black.
9. Explain the concept of probability distribution. How is it relevant for decision making process in business ? 2 + 3
10. Prove that the variance of Binomial distribution is npq .
11. A lock manufacturing company supplies locks to a retailer in different batches. A single batch size contains 300 locks. The companies past record suggests that on an

(4)

average, in a single batch, 10 locks are defective. The number of defects per batch follows Poisson distribution. In a random selection of locks in a batch :

- What is the probability of finding eight or fewer defectives in a batch ?
- What is the probability that the batch contains $6 < x < 10$ defectives ?

12. Distinguish between Type-I error and Type-II error.

GROUP—B

Answer any *four* questions from the following :

10 × 4

13. Fit a least square line to the data in the following table using x as the independent variable.

x	2	5	7	8	9	11
y	2	3	4	6	5	7

14. The following data is attained from garden records of a certain period. Calculate the mean weight of the apple.

Weight in grams	410-420	420-430	430-440	440-450	450-460	460-470	470-480
Number of apples	10	15	20	25	30	12	5

15. Compute the mean of X and Y variables and the coefficient of correlation between them from the following two regression equations :

$$4X - 5Y + 33 = 0$$

$$20X - 9Y - 107 = 0$$

16. (a) When are two events are said to be 'independent' and 'mutually exclusive'? Can two events be mutually exclusive and independent simultaneously? Support your answer with examples.

- (b) State the general addition rule for probability. What is its form if the concerned events are mutually exclusive ?

$$(4 + 3) + (2 + 1)$$

17. (a) State the preconditions for applying Binomial Distribution.

- (b) The average daily food expenditure of families in a certain area has a normal distribution with mean Rs. 125 and standard deviation Rs. 25. What is the probability that a family selected at random from this area will have an average daily expenditure on food in excess of Rs. 175 ? What is the probability that out of eight such families selected at least one family will have their daily food expenditure in excess of Rs. 175 ?

$$4 + 6$$

18. (a) "Sampling is a necessity under certain conditions". Illustrate this by suitable example.

(7)

(b) Explain the concept of sampling error.

How can it be minimized ? 4 + (3 + 3)

[Internal Assessment – 20 Marks]
