

MASTER of BUSINESS ADMINISTRATION
FIRST SEMESTER
STATISTICAL & QUANTITATIVE METHODS
MBA - 104

Duration: 3 Hrs.

Marks: 70

Part : A (Objective) = 20

Part : B (Descriptive) = 50

[PART-B : Descriptive]

Duration: 2 Hrs. 40 Mins.

Marks: 50

[Answer question no. One (1) & any four (4) from the rest]

1. A. Define the following terms

3+7=10

a. Square Matrix b. Transpose of a matrix c. Diagonal Matrix

B. Find Inverse of the following matrix:

$$A = \begin{bmatrix} 1 & 3 & 4 \\ 2 & -3 & 2 \\ 1 & 5 & 6 \end{bmatrix}$$

2. (A) What are the different measures of central tendency?

2+8=10

(B) The following distribution gives the pattern of overtime work done by 100 employees of a company. Calculate mean and Median for overtime work done by per employee.

Overtime hours	10-15	15-20	20-25	25-30	30-35	35-40
Number of employees	11	20	35	20	8	6

3. A. Find $\frac{dy}{dx}$ $Y = (X + 5X)^2$

5+5=10

B. If $A = \begin{bmatrix} 1 & 3 & 4 \\ 2 & -3 & 2 \\ 1 & 5 & 6 \end{bmatrix}$ & $B = \begin{bmatrix} 0 & 3 & 2 \\ 1 & 1 & 2 \\ 1 & 5 & 3 \end{bmatrix}$ then, find AB

4. Define conditional probability. A box contains five red and four blue similar shaped balls. Two balls are drawn at random from the box. Find the probability that both of them are red if: 10
- The balls are drawn together
 - The balls are drawn one after the other, with replacement
 - The balls are drawn one after the other, without replacement.

5. Critically examine the well - known methods of probability sampling and non- probability sampling. 10

6. What is correlation? Given the following information about advertising expenditure and sales: 10

	Advertisement(X) (Rs. in lakh)	Sales(Y) (Rs. in lakh)
Arithmetic mean	10	90
Standard deviation	3	12

Given, Correlation coefficient = 0.8
Obtain the two regression equations.

7. What is the χ^2 -test of goodness of fit? According to a theory in Genetics, the proportion of beans of A,B,C and D types in a generation should be 9:3:3:1. In an experiment with 1600 beans, the frequency of bean of A,B,C and D type was observed to be 882,313,287, and 118 respectively. Does the result support the theory? 2+3=10
(Given, χ^2_{tab} at 5 % level of significance = 7.81)

8. (A) Average weight of 100 screws in box 'A' is 10.4 gm. It is mixed with 150 screws of box 'B'. Average weight of mixed screws is 10.9 gm. Find the average weight of screws of box 'B'. 5+5=10
(B) The following data give the number of passengers travelling by airplane from one city to another in one week. Calculate Variance.
115, 122, 129, 113, 119, 124, 132, 120, 110, 116

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