

MMS - T
BM 01

11-12-2008

Roll No. :
Total No. of Questions: **11**
Duration (hrs.): 3 Hours

Total No. of Printed Pages: 04
Maximum Marks: 30+30

SECTION 1 (Marks : 30)

Note : Section 1 and section 2 to be solved on separate answer sheets.

Question No. 1 is compulsory .

Solve any 3 questions out of 5 from question no. 2 to 6.

Each question carries 8 marks. (3 * 8 marks = 24 marks)

1. Fill in the blanks. Attempt any 6. Each carries 1 marks. (6 marks)

- a) Derivative of $y = \sqrt{x^3 - 5x + 3}$ is = _____.
- b) The required condition for minima of function y is _____.
- c) Marginal Revenue is _____ of Revenue .(derivative, integral)
- d) Correlation which gives absurd result called _____ correlation
- e) Total cost is _____ of Marginal Cost (derivative , integral)
- f) Transpose matrix of $\begin{bmatrix} 3 & 2 \\ -2 & 6 \\ 5 & 1 \end{bmatrix}$ is _____ .
- g) _____ is one important measure of central tendency.
- h) _____ is one important measure of dispersion.
- i) Inverse of matrix $\begin{bmatrix} 2 & -3 \\ 4 & -1 \end{bmatrix}$ is _____.

- 2 (a)** What is meant by central tendency ? What are the important measures of central tendency (Mention the name only). (4 Marks)

For given set of data, calculate median.

Variable (x)	: 0-10	10-20	20-30	30-40	40-50	50-60	60-70
Frequency (f)	: 5	6	8	12	15	5	3

- (b)** What is meant by dispersion ? What are the important measures of dispersion (Mention the name only). Find Mean deviation for the following data :(4Marks)

Age (Yr)	: 1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45
No. of persons(f)	: 7	10	16	32	24	18	10	5	1

- 3.(a)** What are the important informations which we obtain from Correlation Analysis. Discuss the nature of correlation (types) with examples. (4 Marks)

- (b)** Find Spear man's Rank Correlation Coefficient for marks given by two judges:
judge 1: 12 18 32 18 25 24 25 40 38 22
judge 2: 16 15 28 16 24 22 28 36 34 19
Also analyze the result obtained. (4 Marks)

- 4.** Define symmetric matrix, transpose matrix, triangular matrix with suitable example. By matrix method solve the following system of linear equations :
 $5X - 6Y + 4Z = 15$ (8 Marks)

$$7X + 4Y - 3Z = 19$$

$$2X + Y + 6Z = 46$$
 (8 Marks)

- 5.** The marginal cost of producing x units of a commodity in a day is given as $MC = 16x - 1591$. The selling price is fixed at Rs. 9 per unit and the fixed cost is Rs. 1,800 per day. Determine (a) Cost function, (b) Revenue function, (c) Profit function, and (d) Maximum profit that can be obtained in one day.

- 6.(a)** Sketch four cases of line of regression for simple linear regression equation. Analyze it. (4 Marks)

- (b)** Find the regression line equation of y on x for the following data: (4 Marks)

x	: 1	3	4	6	8	9	11	14
y	: 1	2	4	4	5	7	8	9

Estimate the value of y , when $x = 10$.

Section II

(marks : 30)

- NB: 1) Attempt any three questions from Q. 7 to Q.11
2) Figures to the right of the question indicates full marks
3) Statistical table will be provided on request

Q7A: Define the following terms with an example.

- 1) Probability Of An Event
- 2) Expectation Of Discrete Random Variable
- 3) Marginal Distribution

(6)

B: If two cards are drawn from a pack of 52 cards.

What is the probability that

- a) Both cards are red cards.
- b) One is a spade card & one is a club card

(4)

Q8A: State & prove the addition rule for two events.

(4)

B: If X is a discrete random variable with probability function

X	0	1	2	3
P(X=x)	1/8	3/8	3/8	1/8

Find mean & variance

(6)

Q9A: State probability function if

- 1) Random variable X follows an exponential distribution with parameter 'm'
- 2) Random variable X follows a negative binomial distribution with parameters (r, P, Q)

(6)

B: If X follows a binomial distribution with mean =4 & variance =3

Find n, p, & also find P(X=2)

(4)

Q10 Write short notes on any two

- i) Baye's Theorem
- ii) Small sample tests
- iii) Large sample tests
- iv) Normal Distribution
- v) Analysis of variance (one Way)

(10)

Q 10) Solve any two

1) A normal curve with mean 20 & S.D. 10 Find

- i. $P(30 < X < 40)$
- ii. $P(X > 25)$

2) If a sample of size 20 was drawn from a normal population with mean 50 & S D 10
Test whether this sample is from the population with mean 40

3) A Consumer testing service, wishing to test the accuracy of the thermostates of three different kinds of electric irons, set them at 480 degrees & obtained the following actual temperatures readings by means of a thermocouple:

Iron X: 474, 496, 467, 471

Iron Y: 492, 498

Iron Z: 460, 495, 490,

Test the significans whether the differences among the three sample means can be attributed to chance . Use 5% level of significans.

4) For the following 2x2 Contingency table, test the independence of attributes
For 150 persons at 5% level.

	Intelligent	Not Intelligent	
Educated	80	10	
Non Educated	10	50	(10)
