BM 01

Roll No. :

Total - No. OF QUESTIONS : 10

Total No. of Printed Pages : 4

Max Marks 60

Time 3 hrs

N.B.

1) Attempt any three questions from section i and any three questions from section ii.
2) Figure to the right indicates marks.
3) Section I and section II are to be written on the separate answer books.
4) Use of simple calculator is allowed.
5) Log tables, statistical tables, graph papers will be provided on request.

Section I .

Q. 1

A) What is central tendency? State the measures of central tendency. Which measure is the best? Why? (5)

B) The mean salary of group of 50 workers was found to be 720 Rs. Later it was discovered that the salary of Mr. X was wrongly recorded as Rs 320 instead of Rs. 230 find the correct mean salary. (5)

Q 2

a) Define the following: (5)
i) Mean deviation from median and mode.
ii) Combined standard deviation.

B) Calculate standard deviation and coefficient of variation for the following data. (5)

Classes	40-45	45-50	50-55	55-60	60-65	65-70
Frequency	10	22	28	20	12	8

Q 3

a) What is correlation? State the formula for person's coefficient of correlation and spearman's rank correlation coefficient. (4)

B) To study the effect of rain on yield of wheat the following results were obtained. (6)

	Mean	S.D.
Yield in pounds per acre	800	12
Rainfall in inches.	50	2

1

r=0.80

Estimate:

I) The yield when rainfall is 80 Inches.

Ii) The rainfall when yield is 1000 pounds.

Q. 4

A) What is skew ness? What are the measures of skew ness? Represent skew ness graphically. (5)

B) Explain analysis of variance (one way) with an example. (5)

Q. 5

i) $A = \begin{bmatrix} 1 & 2 \\ 3 & -2 \end{bmatrix}$ find $A^2 - 3A + 4I$ (3)

ii) Solve the system of equations using crammer's rule. (4)

$X + Y + Z = 3$

$2X - 3Y + 5Z = 4$

$X + 2Y - 4Z = -1$

iii) The cost function is given by $TC = 2x^3 - 21x^2 + 36x - 20$ (3)

Find the value of x for which cost function minimum. Also find marginal cost and average cost.

2

SECTION II

Q.6 a| Define the following terms with an Example
- I. Mutually exclusive events.
   II. Probability of an event.
   III.   Conditional Probability.

b| If 3 coins are tossed what is the Probability that
   I. No head appear
   II. At least one head appear.

Q.7 a| State Bayes theorem for matually exclusive & exhaustive events.
b| If X is a discrete random Variable with Probability function.

X	0	1	2	3	4
P[x=x]	1/8	2/8	3/8	1/8	1/8

Find its mean and Variance.

Q.8 a| State Probability man function if X Is a discrete random Variable and follows.
   I. .Negative binomial distribution
   II. Hyper Geometric distribution.
b| If X follows binomial with mean 4 and Variance 2, find its Paramenten and hence find
 Probability of exactly 3 Successes

Q.9 Write short notes on any three
   I. Normal distribution
   II. Large Sample tests
   III.   Application of chi-square tests
   IV.   Rules of Probability for two events.
   V. Estimation

Q.10 Solve any two

a| if a continues random Variable X follows normal with mean 50 and Variable 25 find the Probability that Variable lies between 40 and 60

b| If a sample of size 100 with mean 65 is drawn from a large Popution. Test whether this sample has come front the population whose mean is 60 and variance is 9.

C| For the following 2x2 Contingency table, test the independence of attributes.

	Intelligent	Not Intellignt
Honest	25	20
Not Honest	15	30