Roll No. **940**

BCAR/M-14
COMPUTER -ORIENTED STATISTICAL METHODS
Paper: BCA-123
(For Reappear Candidates)

Time : Three Hours] [Maximum Marks : 80

Note : Attempt five questions in all. Select one question from each unit in addition to compulsory Question No. 1.

Compulsory Question

1. (a) State demerits of Median. 2.5

(b) State any four characteristics of Normal distribution. 2.5

(c) Distinguish between Positive and Negative correlation. 2.5

(d) What is the - significance of Least square method ? 2.5

(e) Specify conditions for Chi-square method. 3

(f) State Cochran's theorem. 3

UNIT—I

2. (a) Calculate mode, median, first quartile, third quartile and Bowley's Coefficient of skewness from the following data: 10

Class :	0-10	10-20	20-30	30-40	40-50	50-60
Frequency:	3	9	5	30	18	5

(b) Find the missing frequency from the following data:

Marks:	0-10	10-20	20-30	30-40	40-50	50-60
Frequency:	5	15	20	—	20	10

Given that arithmetic mean is 34. 6

3. (a) First four moments of a distribution about 4 are —1.5, 17, 30 and 108. Find the moments about the mean. Also find 131 and 132. 8

(b) The mean of 5 observations is 4.4 and the variance is 8.24. If the three of five observations are 1, 2 and 6, find the other two observations. 8

UNIT—II

4. (a) Given that 1% of the blades manufactured by a company are defective. Use Poisson distribution to find the probability that a packet of 100 blades contains

(i) No defective blade.

(ii) One defective blade.

(iii) Two or more defective blades. 8

(b) The screw produced by a machine were checked b examining sample of 12. The following table shows the distribution of 128 samples according to the number of defective items they contained:

No.of defectives in a sample of 12	0	1	2	3	4	5	6	7
No. of Samples	7	6	19	35	30	23	7	1

fit a binomial distribution and find the expected frequencies if the chance of machine being defective is 1/2. 8

5. (a) Find the regression equation of X and Y from the following data:

Age of Husband (X)	18	19	20	21	22	23	24	25	26	27
Age of Wife (Y)	17	17	18	18	19	19	19	20	21	22

10

(h) In a correlation study, the following values are obtained:

	X	Y
Mean :	65	67
Standard deviation:	2.5	3.5

and Coefficient of correlation 0.8.

Find two regression equations that are associated with the above values. 6

UNIT—III

6. (a) A study of the heights of 18 pairs of husbands and their wives shows that coefficient of correlation is 0.52. Apply t -test to find whether correlation is significant. [Given that for 16 degree of freedom at 5% level of significance, the table value of t = 2.12] 8

(b) A set of 5 coins is tossed 3200 times and the number of heads appearing each time is noted. The results are as follows :

No. of heads:	0	1	2	3	4	5
Frequency :	80	570	1100	900	50	50

Test the hypothesis that the coins are unbiased.. 8

7. (a) •Fit a straight line to the following data: 8

Year:	1977	1978	1979	1980	1981	1982
Sale :	10	12	15	16	18	19

(b) Fit a curve $y = ae^{bx}$ to the following data:

x :	0	1	2	3
y :	5	8	15	32

8

UNIT—IV

8. (a) Briefly discuss significance of ANOVA.

(b) What is Forecasting ? Briefly describe Opinion polling technique of forecasting.

(c) What are the limitations while using forecasting techniques ? 6+6+4

9. (a) State and prove baye's theorem. 8

(b) In a bolt factory, machine A, B and C manufacture respectively 20%, 30% and 45% of total production. Of their output, respectively 5%, 4% and 2% bolts are defective. A bolt is drawn at random from the factory and is found to be defective. What is the probability that it was manufactured by machine C ? 8