Roll No. ....   Total Pages : 06

BCA/M-20   **1897**
COMPUTER ORIENTED STATISTICAL METHODS
BCA-245

Time : Three Hours]   [Maximum Marks : 80

Note : A candidate will be required to answer *five* questions in all, selecting *one* question from each Unit in addition to compulsory Q. No. **1**. All questions will carry equal marks.

(Compulsory Question)

1. (a) Write the types of continuous series. Explain any *two* of these.   **4**

(b) Merits and demerits of Mode.   **4**

(c) Define mean and variance of Poisson Distribution. **4**

(d) Define Estimation theory and its classes.   **4**

Unit I

2. (a) Define types of measures of central tendency. Give its characteristics for an ideal measure of central tendency.   **8**

(b) Find the relative frequency distribution of the following data : **8**

Class	Frequency
0-5	172
5-10	383
10-15	486
15-20	265
20-25	565
25-30	193

3. (a) Compute the standard deviation for the following data : **8**

x_i	f_i
1	6
2	12
3	18
4	26
5	16
6	10
7	8

(b) Calculate the first four moments about the mean of the following data : **8**

Wages	No. of Persons
0-10	15
10-20	23

20-30	35
30-40	49
40-50	32
50-60	28
60-70	12
70-80	6

Unit II

4. (a) Find the probability distribution of the no. of white balls drawn in a random draw of 3 balls without replacement from a bag containing 4 white and 6 red balls. Also find the mean and variance of the distribution. **8**

(b) If x be the normal variate with mean 50 and standard devivation 8; find the probabilities that :
(i) $x \geq 60$
(ii) $x \leq 60$
(iii) $40 \leq x \leq 70$. **8**

5. (a) Calculate Karl Pearson's coefficient of correlation between X and Y for the following data : **8**

x	y
18	17
19	17

20	18
21	18
22	18
23	19
24	19
25	20
26	21
27	21

(b) Ten students secured the following marks in Statistics and Maths : **8**

Marks in Statistics	Marks in Maths
31	41
45	47
39	27
48	38
24	29
33	37
42	40
36	30
29	35
41	39

Compute their ranks in two subjects and coefficient of rank correlation.

Unit III

6. (a) Find the equation of lines of regressions : **8**

x	y
1	12
3	8
5	6
6	9
7	11
8	8

(b) Find the standard error of estimate y on x : **8**

x	y
1	9
2	8
3	10
4	12
5	11

7. (a) The observed values of a function are 168, 120, 72 and 73 at the positions 3, 7, 9 and 10 of the independent variable respectively. What is the best estimate of the function at the position 6 of the independent variable ? **8**

(b) State and prove Bayes' theorem in decision making. **8**

Unit IV

8. (a) A population consists of three numbers 3, 6, 9. Consider all possible sample of size two which can be drawn with replacement from the population. Calculate the standard error of the sample means. **8**

(b) In a hospital 480 female babies and 520 male babies were born in a week. Do these figures confirm that males and females are born in equal number ? **8**

9. (a) The theory predicts the proportion of beans in the four groups A, B, C and D should be 9 : 3 : 3 : 1. In an experiment with 1600 beans the nos. in four groups were 882, 313, 287, 118. Does the experimental result support the theory ? (Value of χ^2 for 3 d.f. at 5% level of significance 7.81). **8**

(b) Three different machines are used for the production. On the basis of the outputs, test whether the machines are equally effective or not :

Output of Machine

I	II	III
10	9	20
5	7	16
11	5	10
10	6	14

(Given : Value of F at 5% level of significance with degrees of freedom 2 and 9 = 4.26). **8**