Roll No.

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# BCA/M-24 1874 COMPUTER ORIENTED STATISTICAL METHOD BCA-245

Time : Three Hours]

[Maximum Marks : 80

Note: Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. 1 is compulsory. All questions carry equal marks.

## (Compulsory Question)

1. (a) The heights of 8 students in a class are given as : 152.5, 157.2, 183.2, 174.6, 165.7, 181.7, 161.6, 153.9.

#### Find median,

- (b) A card is drawn from a well shuffled pack of 52 playing cards. What is the probability of the card being a black card or an ace card ? 3
- (c) Calculate standard deviation of Binomial distribution.
- (d) Define continuous series and discrete series with example. 3

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- (e) State two merits of correlation co-efficient.
- (f) Show that shift of origin changes the coefficient of standard deviation.

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#### Unit I

Find arithmetic mean, median and mode of the following data : 16

Marks	No. of Student
0–10	4
10–20	2
20–30	18
30-40	22
40–50	21
50-60	19
60–70	10
70–80	3
80–90	2
(a) For the following dis	stribution :
X	F
2	<b>r</b>
6	2
10	• 4
10	5
14	
	0

3.

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18		• •	4	
22			2	
26			2	

Calculate first four moments  $u_1, u_2, u_3$  and  $u_4$  about arithmetic mean  $\overline{X}$ ? 8 Find standard deviation and coefficient of variation

for following data :

(b)

Size	Frequencies
10	2
11	
12	CIO
13	15
14	10
15	4
6	1
	1

### Unit II

4. (a) If A and B are two events with their probability P(A) and P(B) then, prove that :

P(A 
$$\cup$$
 B) = P(A) + P(A) - P(A  $\cap$  B). 8  
(b) Fit a Poisson distribution for the following data : 8  
X F(X)  
0 122

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			60.
2		k L	15
3			2
1			1

5.

(a) The following are the marks obtained by 8 students
 in Physics and Mathematics, Compute rank
 correlation coefficient : 8

Physics	Mathematic
15	40
20	30
28	50
12	32
40	20 -
60	10
20	30
80	60

**(b)** 

In the estimation of regression equations of two variables x and y, the following results were obtained:

 $\overline{X} = 100$ ,  $\overline{Y} = 80$ , N = 10,  $\sum Xi^*Xi = 6300$ ,  $\sum Yi^*Yi = 2860$  and  $\sum Xi^*Yi = 3900$ . Find two regression equations.

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### Unit III

6	5. (a)	Find Karl Pearson correl	ation coefficient of a group
		of 7 persons :	8.0up
		I.Q.	Marks obt.
		100	60
		90	80
		130	70
		110	50
		70	20
	•	80	30
		65	40
	(b)	State and prove Baye's the	eorem for decision-making.
	•		8
7.	(a)	Find the equations of lin	ne of regressions for : 8
		X	Y
		1	12
		3	8
		5	6
		6	9
		7	11
		8	8

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(b)

Find the standard error of estimate of y on x: 8

х	у
1	9
2	8
3	10
4	12
5	11

#### Unit IV

8. (a) Define Chi-square test of equality of two population frequencies. Also write assumptions of Chi-square test.

(b) A sample of 11 plants give the following lengths as:

Length in cm 10.1, 21.5, 11.7, 12.9, 14.8,11.0,19.2, 11.4,16.8, 10.8, 10.2 and an earlier study report that the mean.

Shoot length is 15 cm. Test whether the experiment data confirms the Old view of 5% level of significance (*t* table value at 5% level of significance for 10 degree of freedom is 2.228).

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9. Write notes on the following :

- (a) One-way classification (ANOVA)
- (b) Sampling errors and Non-sampling errors. 8

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