

March-2015

## P.No.206 : Computer Based Statistical Model

Time:-2  $\frac{1}{2}$  hours

Marks:70

- Instructions:- 1) There are all compulsory questions in this Q. Paper.  
2) Use of Calculator allowed.

- Q-1 (a) Define the following terms. 3  
i. mean, ii. Weighted mean, iii. harmonic mean
- (b) 1. Find mean, median, mode and quartile  $Q_3$  from the following data. 7

Number of days of Students absent	0 - 4	4 - 8	8 - 12	12 - 16	16 - 20	20 - 24
Number of Students	5	50	100	60	20	15

2. There are two branches of a company employing 100 and 80 employees respectively. If arithmetic means of the monthly salaries paid by two branches are ₹.4570 and ₹.6750 respectively, find the combined mean of the salaries of the employees of the company as a whole. 4

OR

- Q-1 (a) Define the following terms. 3  
i. geometric mean ii. median iii. mode
- (b) 1. From the following data compute quartile  $Q_2$ , decile  $D_9$ , percentile  $P_{79}$ . 7

Heights(in cms)	Number of Students
141 - 150	6
151 - 160	28
161 - 170	48
171 - 180	30
181 - 190	8

2. In a college having 60% boys, the average of passing boys was 75% and that of girls was 80%. Find the combined average of passing for all the students. 4

- Q-2 (a) Define the following terms. 3  
i. standard deviation ii. coefficient of variation  
iii. quartile deviation
- (b) 1. Compute mean deviation, standard deviation and quartile deviation for the following data. 8

Marks	No. of Students
0-10	6
10-20	5
20-30	8
30-40	15
40-50	7
50-60	6
60-70	3

2. From the following table find the missing no. of observation of first group. If combined mean of both the group is given 12. 3

Group	A.M.	No. of observations
A	10	?
B	15	50

OR

- Q-2 (a) Define the following terms. 3  
 i. range ii. mean deviation  
 iii. quartile deviation

- (b) 1. Find out standard deviation, variance, quartile deviation for the following data. 7

Marks	No. of Students
0-10	4
10-20	6
20-30	12
30-40	20
40-50	10
50-60	6
60-70	3

2. Calculate weighted mean for the following data. 4

Designation	Salary p.m. ₹. In '000 (x)	Strength of the cadre (w)
Principal	60	1
Professor	50	3
Reader	40	6
Lecturer	20	30
Temporary staff	10	40

- Q-3 (a) What do you mean by correlation coefficient? State important properties of correlation coefficient. 5

- (b) 1. The following data relate to the mean and S.D. of the prices of Two shares in a stock exchange: 5

Share	Mean (in ₹.)	S.D. (in ₹.)
Company A	44	5.60
Company B	58	6.30

Coefficient of correlation between the share prices = 0.48

Find the most likely price of Share A corresponding to a price of ₹. 60 of share B and also the most likely price of Share B for a price of ₹. 50 of share A.

2. Find Rank correlation coefficient for the following data. 4

X	28	27	26	35	39	42	39	37	32	22
Y	40	42	38	49	40	50	38	44	45	36

OR

- Q-3 (a) The following data give the ages and blood pressures of woman : 9

Age (x)	56	42	36	47	49	42	60	72	63
Blood Press.(y)	147	125	118	128	145	140	155	160	149

- i. Find the correlation coefficient between X and Y.  
 ii. Determine the line of regression of Y on X.  
 iii. Estimate the blood pressure of woman whose age is 45 years.

- (b) 1. The sum of squares of differences in ranks for two variable is 33, and the coefficient of rank correlation is 0.8. Find the number of pairs of observations. 5

- Q-4 (a) Define the following terms. 3

- i. Sample Space,  
 ii. Mutually Exclusive Events,  
 iii. Independent Event

- (b) 1. Three persons A, B and C aim a target. The probabilities of their hitting the target are respectively  $\frac{2}{3}$ ,  $\frac{1}{4}$ ,  $\frac{1}{2}$ . Find the probability of at least one hit the target. 5

2. If X is a Binomial Variate and  $n = 6$ , if  $4P(X=4) = P(X=2)$ , find probability of success p. 6

OR

- Q-4 (a) Define the following terms. 3  
 (i) Event,  
 (ii) Mathematical Probability,  
 (iii) Equally Likely Event
- (b) 1. In a group of 20 persons, there are 5 graduates. If 3 persons are selected at random 5  
 from the group. Find the probabilities that (i) All are graduates (ii) at least one is  
 graduate.
2. In an intelligence test administered to 1000 children the average score is 42 and 6  
 standard deviation is 24. Find  
 i. Number of children exceeding the score 60  
 ii. Number of children with score lying between 20 and 40
- Q-5 (a) What is time series .State various component of time series. 5  
 (b) Below are given the sales figures for different years. 9

Year :	1968	1969	1970	1971	1972	1973	1974
Sales of Refrigerators	100	110	130	125	170	168	191

- i) Fit a straight line by the method of least squares and obtain the trend values.  
 ii) Estimate the trend value for the year 1976.

OR

- Q-5 (a) Explain five point moving average method. What is main drawback of this method? 6  
 (b) Use 3-year moving average method for the data relating to number of persons 8  
 selected in an employment exchange in an Indian state during 1967 to 1983.

Year	1967	'68	'69	'70	'71	'72	'73	'74	'75
Production	10.5	15.3	13.5	12.9	11.1	15.9	16	16.5	16
Year	'76	'77	'78	'79	'80	'81	'82	'83	
Production	16.4	21.7	21.7	18.7	18.6	21.5	24.6	29.4	