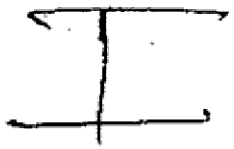

Roll No. ..... Total Pages : 5

BT-5/D09 **8630**

STATISTICAL ANALYSIS

Paper : TT-309

Time : Three Hours] [Maximum Marks : 100

Note : Attempt *five* questions in all, selecting at least *one* question from each unit.

UNIT–I

1. (a) Explain the method of constructing Histogram and Frequency polygon. Which out of these two is better representative of frequencies ? 8

   (b) Given below is the distribution of 140 candidates obtaining marks X or higher in a certain examination :

X	10	20	30	40	50	60	70	80	90	100
Cumulative frequency	140	133	118	100	75	45	25	9	2	0

   Calculate the mean, median and mode of the distribution.

2. (a) What are the various types of sampling ? Explain in short. 10

   (b) Draw the Histogram and Frequency curve for the following data :

Monthly Wages	No. of Workers
10-13	6
13-15	53
15-17	85
17-19	56
19-21	21
21-23	16
23-25	8

UNIT–II

3. (a) Goals scored by two teams A and B in a football season were as follows :

No. of Goals scored in a Match	No. of Matches	
	A	B
0	27	17
1	9	9
2	8	6
3	5	5
4	4	3

   Find out which team is more consistent.

   (b) Obtain Karl Pearson's measure of skewness for the following data :

Values :	5-10	10-15	15-20	20-25	25-30	30-35	35-40
Frequency:	6	8	17	21	15	11	2

4. (a) In a factory, machine A produces 40% of the output and machine B produces 60%. On the average 9 items in 1000 produced by A are defective and 1 item in 250 produced by B is defective. An item drawn at random from a day's output is defective. What is the probability that it was produced by A or by B ?

   (b) What is the expectation of the no. of failures preceding the first success in an infinite series of independent trials with constant probability p of success in each trial ?

UNIT–III

5. (a) In a large city A, 25% of a random sample of 900 school boys had defective eye-sight. In another large city B, 15.5% of random sample of 1600 school boys had the same defect. Is this difference between the two proportions significant ? 7

(b) The means of two single large samples of 1000 and 2000 members are 67.5" and 68.0" respectively. Can the samples be regarded as drawn from the same population of standard deviation 2.5" ? 7

(c) The specifications for the production of a certain alloy call for 23.2% copper. A sample of 10 analyses of the product showed a mean copper content of 23.5% and a S.D. of 0.24%. Can we conclude that the product meets the required specifications ? 6

6. (a) A survey of 320 families with 5 children each revealed the following distribution :

No. of Boys	5	4	3	2	1	0
No. of Girls	0	1	2	3	4	5
No. of Families	14	56	110	88	40	12

Is this result consistent with the hypothesis that male and female births are equally probable ?

(b) Seeds of 4 different types of corn are planted in 5 blocks. Each block is divided into 4 plots, which are then randomly assigned to the 4 types. Test at 5% level whether the yields in kilograms per unit are as shown below vary significantly with soil differences and types of corn :

		Types of Corn			
		I	II	III	IV
Blocks	A	12	15	10	14
	B	15	19	12	11
	C	14	18	15	12
	D	11	16	12	16
	E	16	17	11	14

UNIT–IV

7. (a) The marks obtained by 10 students in Mathematics and Statistics are given below. Find the coefficient of correlation between the two subjects.

Roll No.	1	2	3	4	5	6	7	8	9	10
Marks in Mathematics	75	30	60	80	53	35	15	40	38	48
Marks in Statistics	85	45	54	91	58	63	35	43	45	44

(b) Compare the roles of correlation and regression.

8. (a) Find the most likely price in Mumbai corresponding to the price of Rs. 70 at Kolkata from the following :

	Kolkata	Mumbai
Average Price	65	67
S.D.	2.5	3.5

Correlation coefficient between the prices of commodities in the two cities is 0.8. 8

(b) Refer to the table given below (i) Construct a scatter diagram, (ii) find regression lines of y on x and x on y, and (iii) graph the two regression lines found on the scatter diagram sketched :

x :	6	5	8	8	7	6	10	4	9	7
y :	8	7	7	10	5	8	10	6	8	6

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