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BT-6/M-24

APPLIED STATISTICAL ANALYSIS FOR AI

Paper : ES-CS-AIDS-304A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt any *five* questions. All questions carry equal marks.

1. (a) What is statistics and explain statistics in our everyday?

(b) Draw the histogram and frequency polygon for the following distribution :

Class interval	Frequency
0-99	20
100-199	54
200-299	184
300-399	264
400-499	246
500-599	40
600-699	10
700-799	10

2. Explain in detail :
   (i) Population.
   (ii) Sample.
   (iii) Types of sampling.
   (iv) Sampling classification.
   (v) Graphical representation of data.

3. The monthly rents for 8 one-bedroom apartments located in one area of the city, are

   650 740 815 670 715 740 870 950

   (i) Calculate the sample variance.
   (ii) The sample standard deviation.

4. (a) Find the value of the standard deviation from the following data :

Marks	No. of students
0-10	04
10-20	03
20-30	06
30-40	05
40-50	02

   (b) Find the mean, variance, and standard deviation of the number of tails in three tossed of a coin.

5. (a) In a hospital, 480 female and 520 male babies were born in a week. Do these figures confirm the hypothesis that males and females are born in equal number? Test at 5% level of significance.

(b) A random sample of 400 members have a mean height of 171.8 cm. Can it be reasonably regarded as a sample from a large population with a mean height of 171.17 cm and a standard deviation of 3.30 cm? Use $\alpha = 0.5$.

6. (a) The means of two large samples of sizes 1000 and 2000 are 168.75 and 170.0 cm respectively. Can the samples be regarded as drawn from the same population of S.D. 6.25 cm?

(b) Explain the analysis of variance (ANOVA). Distinguish between one-way and two-way ANOVA techniques.

7. Calculate Karl Pearson's coefficient of correlation between the marks in English and Biology obtained by 10 students.

Marks in English x	Marks in Biology y
20	17
13	12
18	23
21	25
11	14
12	08
17	19
14	21
19	22
15	19

8. Find the rank correlation coefficient from the following data showing the ranks of 10 students in two subjects:

Mathematics	3	8	9	2	7	10	4	6	1	5
Physics	5	9	10	1	8	7	3	4	2	6