Paper / Subject Code: 32628 / Statistical Techniques

(C Scheme) R-2019 "Mechanical" Nov-Dec 2022

Sem V

TE

21/12/2022

(3 Hours) **Total Marks: 80**

Note:

1. **Question No. 1 is compulsory.**
2. Attempt any **THREE** out of the remaining **FIVE** questions.
3. Assume suitable data if necessary.
4. Use of Statistical Tables are allowed

Q. 1. Write short notes on **any FOUR** questions. (20)

(a) Explain parametric and non-parametric test

(b) Explain spearman's rank correlation

(c) Describe any one type of sampling with example

(d) Explain level of significance and confidence level

(e) Explain types of correlations

Q. 2. (a) An ambulance service claims that it takes on an average 8.9 min for ambulance to reach its destination in emergency calls. To check on this claim the agency that licenses ambulance service has timed them on 50 emergency calls getting mean of 9.3 min with standard deviation of 1.6 min. What can they conclude at 5% level of significance. (10)

(b) To access the significance of possible variation in performance in a certain test between the convent school of a city, a common test was given to a few students taken at random from the senior fifth class of each of the four schools concerned. The results are given below, make an analysis of variance of data (10)

A	B	C	D
8	12	18	13
10	11	12	9
12	9	16	12
8	14	6	16
7	4	8	15

Q. 3. (a) Find from the following values of the demand and the corresponding price of a commodity, the degree of correlation between the demand and price by computing Karl Pearson's coefficient of correlation (10)

Demand in quintals	65	66	67	67	68	69	70	72
Price in paise per kg	67	68	65	68	72	72	69	71

(b) Fit a second-degree parabolic curve to the following data (10)

X:	1	2	3	4	5	6	7	8	9
Y:	2	6	7	8	10	11	11	10	9

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Q. 4. (a) 7 fair dice are thrown 729 times. How many times do you expect at least four dice to show three or five? (10)

(b) Explain different types of sampling with example (10)

Q. 5. (a) Fit a straight line to the following data (10)

X :	1	2	3	4	5	6
Y :	49	54	60	73	80	86

(b) The following table give the number of breakdowns in a factory in various days of a week. Using Chi- Square Test check whether breakdown is uniformly distributed or not (10)

Days	Mon	Tue	Wed	Thu	Fri	Sat	Sun
No of Breakdowns	14	22	16	18	12	19	11

Q. 6. (a) Explain steps in Two-way ANOVA with example (10)

(b) If discrete random variable has values (10)

X	1	2	3	4	5	6	7
P (X = x)	K	2K	3K	K^2	$K^2 + K$	$2K^2$	$4K^2$

Find

i. K
ii. Mean
iii. Variance
iv. P ($X \leq 6$)
v. P ($X \geq 2 / X \leq 5$)