Paper / Subject Code: 32628 / Statistical Techniques

TE Sem V (R-2019) "C Scheme" Mechanical Dec'2023
12/2023

(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 uniform distribution with example

(b) Explain Karl Pearson's coefficient and Rank correlation coefficient

(c) Describe cluster sampling with example

(d) Explain types of sampling

(e) Explain level of significance and confidence level in statistical hypothesis

Q. 2. (a) The average marks scored by 32 boys is 72 with standard deviation of 8. While that of 36 girls is 70 with standard deviation of 6 test at 1% LOS. whether boys performed better than girls. **(10)**

(b) The following table gives the yields on 15 samples fields under three varieties of seed A, B, C. **(10)**

A	B	C
20	18	25
21	20	28
23	17	22
16	25	28
20	15	32

Q. 3. (a) If discrete random variable has values **(10)**

X	0	1	2	3	4	5	6
P (X = x)	M	3M	5M	7M	9M	11M	13M

Find

i. M
ii. Mean
iii. variance
iv. standard deviation
v. $P(X \leq 5)$

(b) Obtained the rank correlation coefficient from the following data by using Karl Pearson's coefficient of correlation. **(10**

X	10	12	18	15	40
Y	12	18	25	50	25

Q. 4. (a) In a factory turning out blades in mass production, it was found that in a packet of 100 blades on an average 16 blades are defective. Find the standard deviation of the defective blades. Can the distribution of defective blades be approximated to a normal distribution? If so, write it's equation. **(10)**

(b) Explain probability sampling with example **(10)**

Q. 5. (a) 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

(b) The following table gives no of breakdown in a factory in various days of week. Using Chi-square test check whether breakdown are uniformly distributed or not. **(10)**

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

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

(b) Fit a straight line from following data. **(10)**

X	0	1	2	3	4	5
Y	1	2	3	4.5	6	7.5

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