SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN
(AUTONOMOUS)
(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)
Chromepet, Chennai — 600 044.
B.Sc.(Computer Science) END SEMESTER EXAMINATIONS NOVEMBER -2023
SEMESTER - IV

20UCSAT4004 - Statistical Methods and its Applications - II

Total Duration : 2 Hrs 30 Mins. Total Marks : 60

Section B

Answer any **SIX** questions $(6 \times 5 = 30$ Marks)

1. Explain the different types of correlation with example.
2. Sketch the applications of Chi-square distribution.
3. The ranks of same 16 students in Mathematics and Physics are given within brackets:
   (1,1), (2,10), (3,3), (4,4), (5,5), (6,7), (7,2), (8,6), (9,8), (10,11), (11,15), (12,9), (13,14), (14,12),(15,16), (16,13)
   Compute rank correlation.
4. Describe the test of difference of means for large samples.
5. Explain F test for equality of two population variances.
6. Prepare ANOVA table for Latin Square Design.
7. Describe the test of independence in contingency table.
8. Mention the advantages of non-parametric test.

Section C

Answer any **THREE** questions $(3 \times 10 = 30$ Marks)

9. Find the two regression equations for the following data:

X	65	66	67	67	68	69	70	72
Y	67	68	65	68	72	72	69	71

   Also compute the coefficient of correlation.

10. Explain (i) Type I error (ii) Type II error (iii) Level of significance (iv) Critical region

Contd...

11. Given below is a 5 $\times$ 5 Latin Square design for the Rocket propellant problem. Perform the statistical analysis and draw conclusions.

Batches of raw material	Operators				
	1	2	3	4	5
1	A24	B20	C19	D24	E24
2	B17	C24	D30	E27	A36
3	C18	D38	E26	A27	B21
4	D26	E31	A26	B23	C22
5	E22	A30	B20	C29	D31

12. The manufacturer of television tubes knows from past experience that the average life of a tube is 2000 hours with a standard deviation of 200 hours. A sample of 100 tubes has an average life of 1950 hours. Test at the 0.05 level of significance if this sample came from a normal population of mean 2000 hours.

13. The following independent observations were made on the price of grain in 10 consecutive months: Test the hypothesis that the expected price in ith month is Rs.(100 +30), i = 1,2,...,10 under the assumption that the prices are normally distributed.

Months	1	2	3	4	5	6	7	8	9	10
Price	115	118	120	140	135	137	139	142	144	150

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