

B.Sc. DEGREE END SEMESTER EXAMINATION - OCTOBER 2019**SEMESTER – 5: STATISTICS FOR COMPUTER APPLICATIONS****COURSE: U5CRCST6: DESIGN OF EXPERIMENTS***(For supplementary - 2014 admission)*

Time: Three Hours

Max. Marks: 75

(Use of Non-programmable calculator and Statistical Tables allowed)**PART A**Answer **all** questions. Each question carries 1 mark.

1. What do you mean by the experimental material?
2. Differentiate between fixed and random effect models.
3. What is meant by replication?
4. In RBD with 4 blocks and 5 treatments. Calculate the error degrees of freedom
5. What do you mean by the statement 'treatment effects are significant' in ANOVA?
6. State the null and alternative hypotheses in CRD.
7. Write down the statistical model assumed in RBD.
8. What is orthogonal contrasts?
9. Give 2 merits of C.R.D
10. What do you mean by testing linear hypothesis? (1 x 10 = 10)

PART BAnswer **any eight** questions. Each question carries 2 marks.

11. Describe 'experimental error'. What are its main sources?
12. What do you understand by BLUE of a parametric function?
13. What do you mean by factorial Experiment?
14. What are the models used in one way and two way classified data?
15. Explain critical difference.
16. What do you mean by CRD?
17. What do you mean by L.S.D.
18. Compare the efficiency of RBD over CRD
19. State any two advantages of RBD.
20. What is the use of missing plot technique? (2 x 8 = 16)

PART CAnswer **any five** questions. Each question carries 5 marks.

21. What do you understand by local control? Explain its role in design of experiments.
22. Give the layout of a LSD with 4 treatments A_1 B_1 C_1 D .
23. Explain briefly about the fundamental principles of design of experiments
24. What are the advantages and disadvantages of CRD?

25. Discuss the analysis of a Latin Square design
26. Obtain the efficiency of LSD over corresponding RBD when (i) rows of LSD are used as blocks of RBD and (ii) columns of LSD are used as blocks of RBD.
27. Explain the various steps involved in Yates' method of computing factorial effect totals.

(5 x 5 = 25)

PART D**Answer any two questions. Each question carries 12 marks.**

28. Analyse the following CRD

T ₁	20.9	12.4	10.1	4.2
T ₂	23.7	14.4	9	
T ₃	13.2	10.2	5.1	
T ₄	5.8	6.1	4.8	1.5

29. Describe estimable linear parametric function for the model

$$Y_1 = \theta_1 + \theta_2 + e_1$$

$$Y_2 = \theta_1 + \theta_3 + e_2$$

$$Y_3 = \theta_1 + \theta_2 + e_3$$

Show that $c_1\theta_1 + c_2\theta_2 + c_3\theta_3$ is estimable if $c_1 = c_2 + c_3$.

30. Carryout the ANOVA for the following results of a LSD:

A (12)	C (19)	B (10)	D (18)
C (18)	B (12)	D (6)	A (7)
B (22)	D (10)	A (5)	C (20)
D (12)	A (7)	C (27)	B (17)

31. Find out the main effects and interactions in the following
- 2^2
- factorial experiment and write down the analysis of variance table.

	(1)	a	b	ab
	00	10	01	11
Block I	64	25	30	6
Block II	75	14	50	33
Block III	76	12	41	17
Block IV	75	33	25	10

(12 x 2 = 24)
