QP CODE: 25020347

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Reg No : .....

Name : .....

B.Sc DEGREE (CBCS) REGULAR / REAPPEARANCE / MERCY CHANCE EXAMINATIONS, FEBRUARY 2025

Sixth Semester

B.Sc Statistics Model I

CORE COURSE - ST6CRT11 - DESIGN AND ANALYSIS OF EXPERIMENTS

2017 Admission Onwards

D961A466

Time: 3 Hours Max. Marks : 80

Part A

*Answer any **ten** questions.*

*Each question carries **2** marks.*

1. What do you mean by a linear model?
2. What do you mean by testing linear hypothesis?
3. What is ANOVA technique?
4. How do you find mean sum of squares?
5. What are the uses of experimental design?
6. Write the statistical model of RBD, by illustrating the terms in it.
7. Obtain the efficiency of RBD over CRD.
8. What is the use of missing plot technique?
9. Give an example of a 4×4LSD.
10. Give an example of factorial experiment.
11. Describe the use of Yates' method in Factorial experiment.
12. Give an example of a 2^3 factorial experiment.

(10×2=20)

Part B

*Answer any **six** questions.*

*Each question carries **5** marks.*

13. State and prove the necessary and sufficient condition for the estimability of a linear parametric function.

14. Write down the analysis of covariance table for a single factor experiment with one covariate.

15. Discuss how the efficiency of an experiment can be increased by increased replication and local control.

16. Discuss the merits and demerits of CRD.

17. Describe the merits of RBD.

18. Derive the efficiency of LSD compared to CRD.

19. Discuss the analysis of a Latin square design with one missing value.

20. Explain the main effects and interaction effects in factorial experiments.

21. Describe the analysis of 2^n factorial experiment by clearly stating the main effects and interaction effects.

(6×5=30)

Part C

*Answer any **two** questions.*

*Each question carries **15** marks.*

22. *A set of data involving four "tropical feed stuffs A, B,C,D" tried on 20 chicks is given below. All the 20 chicks are treated alike in all respect except the feeding treatments and each feeding treatment is given to 5 chicks. Analyze the data.*

Weight gain of baby chicks fed on different feeding materials composed of tropical feed stuffs

A	*55*	*49*	*42*	*21*	*52*
B	*61*	*112*	*30*	*89*	*63*
C	*42*	*97*	*81*	*95*	*92*
D	*169*	*137*	*169*	*85*	*154*

23. Fill in the blanks in the following Analysis of variance table of the L.S.D. Also set up the analysis of variance.

Source of Variation	*d.f*	*S.S*	*M.S.S*	*F*
Rows	.....	*72*	.....	*2*
Columns	.....	.....	*36*	.....
Treatments	.....	*180*	.....	.....
Error	*6*	.....	*12*	.....
Total	.....	.....		

24. What is a completely randomised design? Give the complete statistical analysis of CRD.

25. A 2^2 experiment is replicated 'r' times. Describe the procedure for testing the presence of different main effects and interactions .Give the analysis of degrees of freedom in a factorial experiment with two factors at two levels each in three replications.

(2×15=30)