



**2023/TDC(CBCS)/EVEN/SEM/
STSHCC-601T/275**

TDC (CBCS) Even Semester Exam., 2023

**STATISTICS
(Honours)**

(6th Semester)

Course No. : STSHCC-601T

(Design of Experiments)

Full Marks : 50

Pass Marks : 20

Time : 3 hours

*The figures in the margin indicate full marks
for the questions*

SECTION—A

Answer any ten of the following questions : $2 \times 10 = 20$

- 1. Define an experimental unit.**
- 2. Define a treatment in reference to an experiment.**
- 3. Define random effect model with an example.**



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4. Write down the advantages of randomized block design (RBD).
5. What are the applications of randomized block design (RBD)?
6. Write down the disadvantages of Latin square design (LSD).
7. What is the importance of Latin square design (LSD)?
8. Write down the advantages of factorial experiment (FE).
9. Define contrast and orthogonal contrast.
10. Define balanced incomplete block design (BIBD).
11. Define confounding.
12. What are the advantages of confounding?
13. Write down the main effects and interaction effects of 2^2 -factorial experiment.
14. Define efficiency of a design.
15. Define missing plot technique.

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(Continued)

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SECTION—B

Answer any five of the following questions : 6×5=30

16. Explain randomization and replication principles of experimental designs.
17. Give the complete statistical analysis of randomized block design (RBD).
18. What is Latin square design (LSD)? Give the layout of 5×5 LSD. Also discuss the advantages and disadvantages of an LSD.
19. Explain how missing plot technique can be used to estimate the missing yield of a plot in case of RBD.
20. Obtain the formula for estimating a single missing value of a $P \times P$ LSD.
21. Obtain the efficiency of RBD over CRD (completely randomized design).
22. Obtain the efficiency of LSD over CRD.
23. Establish the interrelationship among balanced incomplete block design (BIBD), symmetric BIBD and resolvable BIBD.

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(Turn Over)



24. Give the complete analysis of 2^3 -factorial experiment.
25. Distinguish between partial and complete confounding.
