D2AST2204 **(2 page)** **Name.....**
Reg.No.....

SECOND SEMESTER M.Sc. DEGREE EXAMINATION, APRIL 2023
(Regular/Improvement/Supplementary)

STATISTICS
FMST2C09- DESIGN AND ANALYSIS OF EXPERIMENTS

Time: 3 Hours **Maximum Weightage: 30**

Part A: Answer any *four* questions. Each carries 2 weightage.

1. Discuss the assumptions of ANOVA regression.
2. Define Latin Square Design.
3. Discuss the ANOVA table for Randomized Block Design.
4. Explain the basic principles of experimentation in design of experiment technique.
5. Discuss why factorial experiments are performed.
6. Define BIBD.
7. What do you mean by confounding?

(4 × 2 = 8 weightage)

Part B: Answer any *four* questions. Each carries 3 weightage.

8. Estimate the missing value in the following LSD.

	1	2	3	4
I	A 12	C 9	B 10	D 8
II	C 18	B 11	D 5	A -
III	B 2	D 10	A 5	C 4
IV	D 11	A 7	C 17	B 17

9. Identify the design and complete the missing values in the table.

ANOVA TABLE

Source of Variation	***DF***	**Sum of Squares**	**Mean Sum of Squares**	**F value**
Block	3	44.4		
A	1	227.3		
B	1	1107.2		
AB	1	303.6		
Residual	9	27.4		
Total	**15**	**1709.9**		

10. Discuss the construction of BIBD.

(P.T.O.)

11. Compare ANOVA and Kruskal Wallis Test.
12. Discuss fixed effect and random effect model.
13. How do residuals are useful to detect the deviations from normality assumptions?
14. When do we prefer RBD over CRD? Give an example.

(4 × 3 = 12 weightage)

Part C: Answer any two questions. Each carries 5 weightage.

15. Discuss the importance and relevance of design of experiments. Briefly explain with an example.
16. For a BIBD with usual notations, show that b$\geq v + r - k$.
17. A set of data involving four tropical feed stuffs A, B, C tried on 12 pigs is given below. All the 12 pigs are treated alike in all respect except the feeding treatment and each treatment is given to 4 pigs. Analyse the given data with suitable assumptions about the hypothesis.

A:	26	36	31	33
B:	42	25	47	34
C:	47	43	43	40

18. Construct 2^5 factorial experiment with ABD and ACE confounded with 8 runs into 4 blocks.

(2 × 5 = 10 weightage)