

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.

M.Sc.Biostatistics - END SEMESTER EXAMINATIONS - APRIL 2025

SEMESTER - II

**23PBSCT2006 - Design of Experiment and Bioassay**

Total Duration : 2 Hrs. 30 Mins.

Total Marks : 60

### Section B

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

1. Explain the fixed, random, and mixed effects models with examples.
2. Discuss the procedure for Tukey's multiple comparison test and its applications.
3. Differentiate between Latin Square Design and Randomized Block Design with suitable examples.
4. Analyze the importance of ANCOVA in Randomized Block Designs.
5. Describe the significance of confounding in a  $2^K$  factorial design.
6. Compare and contrast total and partial confounding in factorial designs.
7. Illustrate the importance of Nested Design in experimental research.
8. Assess the role of response surface methodology in experimental designs.

### Section C

I - Answer any **TWO** questions ( $2 \times 10 = 20$  Marks)

9. Derive the statistical model for Two-Factor ANOVA with interactions and provide an example.
10. Evaluate the significance of Repeated Measures Designs with and without blocking in clinical trials.
11. Explain total confounding of  $2^k$  designs in  $2^P$  blocks and derive the relevant equations.
12. Critique the statistical analysis of  $3^2$  designs and its relevance in research.

II - Compulsory question ( $1 \times 10 = 10$  Marks)

13. Distinguish between direct and indirect assays in bioassay experiments and discuss their significance.

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