PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION MAY 2024
(Second Semester)

Branch- **STATISTICS**

LINEAR MODELS AND DESIGN OF EXPERIMENTS

Time: Three Hours   Maximum: 75 Marks

SECTION-A (10 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks   (10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	In a mixed-plot ANOVA, what is a within-subject factor also known as? a) Repeated measure factor b) Covariate c) Interaction factor d) Between-subject factor	K1	CO1
	2	In non-orthogonal designs, what is the term used to describe the correlation or interaction between factors? a) Colinearity b) Independence c) Homoscedasticity d) Heterogeneity	K2	CO1
2	3	What is the error degree of freedom in RBD? a) N_{-2} b) n-1 c) r-1 d) (n-1)(r-1)	K1	CO2
	4	In LSD square design, the number of rows, columns and treatments are a) Always different b) Not necessarily equal c) Always equal d) None of them	K2	CO2
3	5	How many dependent variables does a two way ANOVA have? a) One b) Two c) Three d) Four	K1	CO3
	6	In ANOVA, a factor is defined as the a) dependent variable b) independent variable c) Both(a) and (b) d) None of these	K2	CO3
4	7	In a balanced incomplete block design, what is the property of balance referring to? a) Equal size of all blocks b) Equal numbers of treatments in each block c) Equal number of blocks d) Equal number of replications	K1	CO4
	8	In a PBIBD, how are blocks organized? a) Blocks with equal sizes b) Blocks with equal replications c) Blocks with unequal size d) Blocks with equal number of treatments	K2	CO4
5	9	Which of the following is a common unit for expressing bioassay results? a) Grams b) Units c) Lumen d) ED50	K1	CO5
	10	Which of the following is a limitation of bioassays? a) Lack of specificity b) Rapid results c) Independence from living organisms d) High cost	K2	CO5

SECTION - B (35 Marks)
Answer ALL questions
ALL questions carry **EQUAL** Marks $(5 \times 7 = 35)$

Module No.	Question No.	Question	K Level	CO
1	11.a.	Outline the analysis of non-orthogonal data.	K2	CO1
		(OR)		
	11.b.	Illustrate the Gauss Markov's Theorem.		
2	12.a.	Identify the advantages and disadvantages of RBD.	K3	CO2
		(OR)		
	12.b.	Construct the missing plot technique for LSD.		
3	13.a.	Explain partial confounding and its advantages.	K4	CO3
		(OR)		
	13.b.	Examine the concept of asymmetrical factorial experiments.		
4	14.a.	Inspect the youden square and lattice design.	K4	CO4
		(OR)		
	14.b.	Categorize the analysis of BIBD using inter block design.		
5	15.a.	Evaluate the cross over design.	K4	CO5
		(OR)		
	15.b.	Describe the transformation that are used in designing and analytical techniques.		

SECTION -C (30 Marks)
Answer ANY THREE questions
ALL questions carry **EQUAL** Marks $(3 \times 10 = 30)$

Module No.	Question No.	Question	K Level	CO
1	16	Illustrate the mixed plot technique.	K2	CO1
2	17	Construct the model for ANOCOVA technique for CRD.	K3	CO2
3	18	Discover the 2^n factorial experiments and its applications.	K4	CO3
4	19	Examine the design PBIBD and its properties.	K4	CO4
5	20	State the bio-assays. Elaborate the feller theorem and its applications.	K5	CO5

Z-Z-Z   END