2911 N888

Candidate's Seat No : _____

B.Sc Sem.-5 Examination

CC 304

Statistics

Time : 2-30 Hours] **November-2024** **[Max. Marks : 70**

Instructions:

1. All questions are compulsory. Figures to the right show marks of each question.
2. Statistical tables will be provided on request. Use of scientific calculator is allowed.

Q. 1	a	In context of Analysis of one – way classification, state a linear model, hypotheses, assumptions, lay-out and ANOVA TABLE.	7
	b	Give lay out and statistical analysis of Completely Randomised Design.	7
		OR	
	a	In usual notations, for one – way classification, prove that $E(SS_{Factor}) = (k-1)\sigma^2$.	7
	b	Write a short note on Completely Randomised Design. State its merits and demerits.	7
Q. 2	a	Stating linear model for two way analysis of variance, if, Y is an observable random variable with observations y_{ij}, then in usual notations, prove that $\hat{\mu} = \bar{y}_{oo}$ and $\hat{\alpha} = \bar{y}_{io} - \bar{y}_{oo}$	7
	b	Give lay out and state merits and demerits of Randomised Block Design. How do you identify that given design is a Randomised Block Design?	7
		OR	
	a	Derive the formula to estimate one missing yields in Randomised Block Design.	7
	b	Derive expected value of total sum of squares for two way lassification.	7
Q. 3	a	Explain, in brief, Latin Square Design. Give Statistical Analysis of Latin Square Design.	7
	b	Derive the formula to estimate two missing yields in Latin Square Design.	7
		OR	
	a	Give Merits and Demerits of Latin Square Design	7
	b	Derive efficiency of Latin Square Design over Completely Randomised Design.	7
Q. 4	a	Write a short note on factorial experiments.	7
	b	For three factors N, P and K, each at two levels, show that main effect of factor N is $\frac{(n+1)(p-1)(k-1)}{8}$.	7
		OR	
	a	Define confounding, total and partial confounding giving appropriate example.	7
	b	Define Yate's procedure for 2^2 factorial experiments.	7
Q. 5		**Answer the following**	**14**
	1	Define Analysis of Variance.	

(P.T.O)

2 State different models used in Analysis of Variance.
3 What is treatment?
4 Do you agree that Completely Randomised Design is also used when one or more observations are missing?
5 Define Plot and block.
6 State the principles used in Randomised Block Design.
7 If the underlying experimental material is heterogeneous, do you suggest Completely Randomised Design?
8 State the formula of one missing yield for Randomised Block Design.
9 Give a situation, where Latin Square Design is applicable.
10 How do you identify Latin Square Design?
11 State the formula for one missing yield in Latin Square Design.
12 Can we consider Latin Square Design as a three way classification?
13 What is simple effect?
14 Do you agree that factorial experiments are a modified form of basic experimental design?

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