M.Sc (BIOSTATISTICS) DEGREE EXAMINATION

SECOND YEAR

Paper I – RESEARCH DESIGNS AND BIOSTATISTICAL INFERENCE - II

Q.P. Code : 282855

Time : Three hours **Maximum : 100 marks**

Answer All questions.

I. Essays: **(2 X 20=40)**

1. The cramer Rao bound is often used to lower bound the mean square error of symbol timing estimators. However, the valid application of this bound requires that the signaling wave form be sufficiently smooth. Discuss this issue further in inequality distribution of health services in India.

2. There were no significant differences in consumer preferences between different levels of salt (from 1.5 to 3%) in Hans, but there was a significant difference in preferences between levels of sugar. Discuss the application of balanced lattice design in understanding this phenomenon.

II. Write Short Notes on : **(10X 6 = 60)**

1. Confunding in factorial design.
2. Double sampling.
3. Maximum likelihood estimators.
4. Multiple range test.
5. Method of moments.
6. Split plot design.
7. BIBD (Balanced Incomplete Block Design).
8. Sequential probability ratio test.
9. Orthogonal latin square design.
10. Method of modified minimum chi-square.

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[KZ 1011] **Sub. Code: 2855**

M.Sc NON-MEDICAL DEGREE EXAMINATION

SECOND YEAR

BRANCH II - BIOSTATISTICS

PAPER I – RESEARCH DESIGNS AND BIOSTATISTIC I INFERENCE - II

Q.P. Code : 282855

Time : 3 hours (180 Min) **Maximum : 100 marks**

Answer ALL questions in the same order.

I. Elaborate on :	**Pages (Max.)**	**Time (Max.)**	**Marks (Max.)**
1. The need for statistical inference in medical research with examples.	17	40	20
2. Non-parametric tests with examples.	17	40	20
II. Write notes on :			
1. Balanced incomplete block design.	4	10	6
2. Lilcox rank sum test.	4	10	6
3. Sequential probability ratio test.	4	10	6
4. Cluster sampling.	4	10	6
5. Method of chi-square.	4	10	6
6. Ratio estimate.	4	10	6
7. Analysis of covariance.	4	10	6
8. Rao-Blackwell inequality.	4	10	6
9. Cross-over design with illustrations.	4	10	6
10. Total and partial confounding.	4	10	6

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[LB 1012] **OCTOBER 2012** **Sub. Code: 2855**

M.Sc NON-MEDICAL DEGREE EXAMINATION
SECOND YEAR
BRANCH II - BIOSTATISTICS
PAPER I – RESEARCH DESIGNS
AND BIOSTATISTIC I INFERENCE - II
Q.P. Code : 282855

Time : 3 hours **Maximum : 100 marks**
(180 Min)

Answer ALL questions in the same order.

I. Elaborate on :	**Pages (Max.)**	**Time (Max.)**	**Marks (Max.)**
1. Derive the statistical analysis of 3^2 design.	17	40	20
2. (a) Carry out the analysis of LSD with one missing observation.	17	40	20
(b) Stating the regularity conditions, state and prove Cramer – Rao inequality.			

II. Write notes on :

1. Prove that the regression estimate is more precise than the ratio estimate.	4	10	6
2. Explain Two-factor ANOVA with unequal and equal replications.	4	10	6
3. Distinguish between with and without blocking repeated measure designs.	4	10	6
4. What is BIBD? Establish the relationship between the parameters of BIBD.	4	10	6
5. Explain the main effects and first order interactions in 2^k full factorial design.	4	10	6
6. Explain quota sampling for proportions.	4	10	6
7. Obtain the variance of the sample mean under two-stage sample with equal first stage units.	4	10	6
8. Find MLE of normal parameters *u and* $\sigma^{2.}$	4	10	6
9. Explain method of moment estimator. State its properties.	4	10	6
10. Describe Mann Whitney Wilcoxon test.	4	10	6

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