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PAR-003-1172002 Seat No. _____

M. Sc. (Statistics) (Sem. II) (CBCS) Examination

August / September - 2020

MS - 202 : Planning and Analysis of Industrial Experiments

Faculty Code : 003

Subject Code : 1172002

Time : $2\frac{1}{2}$ Hours] [Total Marks : **70**

Instructions : (1) Attempt all questions.
(2) Each question carries equal marks.

1 Answer the following questions : (Any **Seven**) **14**

(1) Define non-binary Design.
(2) Define Orthogonal Balanced Design.
(3) C matrix is _____ matrix.
(4) A design is said to be balanced design if C-matrix is written as _____.
(5) Difference between Basic Design and factorial Design.
(6) Write Properties of Block design.
(7) Define Binary Design.
(8) Explain parameters of PBIBD and write parametric relation of PBIBD.
(9) RBD is _____ block design.
(10) Write parameters and parametric relation of BIBD.

2 Answer the following questions : (Any **Two**) **14**

(1) Define :
  (i) Resolvable BIBD
  (ii) Affine Resolvable BIBD
  (iii) α – Affine resolvable BIBD. With an Example.
(2) Explain Bose Inequality.
(3) Using Hadamard matrix Construction of BIBD.

3 Answer the following questions : **14**

(1) Obtain following BIBD using Galois field $v = b = 7, r = k = 3, \lambda = 1$.

(2) Define confounding, and explain three types of confounding.

OR

3 Answer the following questions : **14**

(1) Prove that : $\sum_{i=1}^{m} ni\,\lambda i = r(k-1)$.

(2) Prove that : $\lambda(v-1) = r(k-1)$.

4 Answer the following questions : **14**

(1) Explain 2^3 factorial experiment.

(2) Write parameters of PBIBD and prove $\sum_{i=1}^{m} ni = V - 1$.

5 Answer the following questions : (Any **Two**) **14**

(1) Explain Ghosh and Biswas method.

(2) Explain Balanced Incomplete block design.

(3) Explain partially balanced incomplete block design.

(4) For any BIBD show that efficiency factor $E < 1$. Prove it.
