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MCA-003-1172002 Seat No. _____

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

April / May - 2018

MS - 202 : Planning & 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) C matrix is _____ matrix.

(2) Write parameters and parametric relation of BIBD.

(3) Define non-binary Design.

(4) RBD is _____ block design.

(5) Explain parameters of PBIBD and write parametric relation of PBIBD.

(6) Write Properties of Block design.

(7) Define Orthogonal Balanced Design.

(8) Difference between Basic Design and factorial Design.

(9) Define Binary Design.

(10) A design is said to be balanced design if C-matrix is written as _____

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

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

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

(3) Explain Bose Inequality.

3 Answer the following questions : **14**

(1) Explain partially balanced incomplete block design.

(2) Prove that for any symmetrical BIBD $(r - \lambda)$ must be a perfect square for even v.

OR

3 Answer the following questions : **14**

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

(2) Explain Ghosh and Biswas method.

4 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 Balanced Incomplete block design.

(3) Using Hadamard matrix Construction of BIBD.

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

(1) Explain 2^3 factorial experiment.

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

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

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