

**B.N. Bandodkar College of Science, Thane**

**S.Y. B.Sc. Second Term end Examination Feb 2012**

**Statistics Paper II**

Duration 2 hrs

Max Marks-60

- N.B. 1) All Questions are compulsory.  
2) Figures to right indicate marks.

- Q.1) a) Explain randomised block design(RBD). 7
- b) Attempt any **TWO** 4
- 1) Explain one way classification and two way classification.  
State the use of analysis of variance. 4
- 2) Explain principle of local control used in the designs. 4
- 2) in  $2^2$  factorial experiment with two factors A and B, obtain the expression for main effect A and interaction AB.. 4
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- Q2) a) State model for two way classification. In usual notations represent the data in two way table. How do you split total sum of squares into various components to be stated. State the hypothesis to be tested in two way classification.. 7
- b) Attempt any **ONE**
- 1) For one way classification, in usual notations derive an expression for expected value of error mean sum of squares.. Also give the unbiased estimator of error variance. 8
- 2) In two way classification one factor, say A, has r levels and other factor, say B, has r levels, then obtain expected value of sum of squares due to factor A. 8
- Q 3) (a) Explain the terms. 3
- (1) Experimental unit 2
- (2) Randomisation 2
- (3) Replication 2
- b) Attempt any **ONE**
- 1) Explain how the principles of designs are incorporated in RBD. \8

- 3) Obtain expression for one missing observation from RBD.  
Also explain how do you modify the analysis when estimated observation is used in analysis. 8
- Q.4) a) Obtain expression for estimating one missing observation in  $m \times m$  Latin Square Design(LSD). 7
- b) Attempt any **ONE**
- 1) Derive expression for efficiency of LSD as compared to RBD when columns of LSD are taken as blocks of RBD. 8
- 2) What do you understand by factorial experiments ?  
Give layout and analysis of  $2^3$  factorial experiment conducted in RBD with 4 blocks. 8