

B.N. Bandodkar College of Science, Thane  
S.Y. B.Sc. ( Sem IV) ~~Examination 2013~~ <sup>March</sup> - 14

Semester IV

USST402

Duration 2 hrs

Max Marks-60

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

- Q1) a) Attempt any ONE
- 1) Explain - analysis of variance. Also state various assumptions made. 7
  - 2) Explain chance causes and assignable causes. 7
- b) Attempt any ONE
- 1) State model for one way classification. Explain least squares method to estimate various parameters in the model 8
  - 2) How do you split total sum of squares into various components in two way classification? Give ANOVA table with formulae in two way classification. 8
- Q 2) a) Attempt any ONE
- 1) Explain (i) Experimental unit (ii) Randomization. (iii) Local control 7
  - 2) Write a note on completely randomized design( CRD) . 7
- b) Attempt any ONE
- 1) In CRD, obtain expected value of error sum of squares. 8
  - 2) In randomized block design ( RBD ) obtain mean value of treatment sum of squares 8
- Q.3) a) Attempt any ONE
- 1) Explain Latin Square Design(LSD). Give layout of 4x4 LSD. 7
  - 2) State various hypothesis tested in LSD. Also give ANOVA table with formulae. 7
- b) Attempt any ONE
- 1) Obtain estimators of various parameters model for LSD. 8
  - 2) Give analysis of  $2^3$  factorial design conducted in LSD. 8
- Q4) a) Attempt any ONE
- 1) Derive formula for estimating one missing observation from RBD in usual notations.. 7
  - 2) State use of Yates' method and do it for  $2^3$  factorial design with factors P, Q, R . 7
- b) Attempt any ONE
- 1) Obtain expression for main effect A, interaction AB and ABC in  $2^3$  factorial design. 8
  - 2) Derive formula for estimating one missing observation from mxm LSD in usual notations. Also state the additional changes to be made while analyzing data with estimated value. 8

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