D-617

Total No. of Pages : 3

Seat No.	

B.Sc.(Part-III) (Semester-V) (Revised) Examination, April-2016
STATISTICS
Design of Experiments (Paper-XI)
Sub. Code : 65860

Day and Date : Monday, 04-04-2016 **Total Marks : 40**

Time : 12.00 noon to 2.00 p.m.

Instructions : 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q1) Choose the correct alternative: **[8]**

a) The allocation of treatments to the experimental units with equal probability is known as _____

i) replication ii) randomization

iii) local control iv) none of these

b) In RBD, blocks are formed in _____ direction to the fertility gradient.

i) perpendicular ii) horizontal

iii) parallel iv) none of these

c) In ANOCOVA the least square estimate of β = _____.

i) Exx/Eyy ii) Exy/Exx

iii) Eyy/Exy iv) none of these

d) When the interaction effect is confounded in all the replicates then it is called _____ confounding.

i) partially ii) complete

iii) incomplete iv) none of these

P.T.O.

e) In an experiment the parameters are estimated by the method of _____.

i) moments ii) iteration

iii) least squares iv) none of the:

f) In 2^3 factorial experiment the total number of treatment combinations are _____.

i) 7 ii) 8

iii) 6 iv) none of these

g) Latin Square Design is _____ three way layout.

i) complete ii) incomplete

iii) both (i) and (ii) iv) none of these

h) In factorial experiments the effect totals are obtained by _____.

i) Kendoll ii) Fisher

iii) Yates iv) Karl Pearson

Q2) Attempt Any Two of the following: **[8 + 8 = 16]**

a) What are the three basic principles of experimental design? Explain how these principles are used in R.B.D.

b) Define factorial experiment. Give the mathematical model, Null hypothesis and analysis of variance table for 2^3 factorial experiment.

c) Give the concept and definition of efficiency of a design. Derive the expression of efficiency of RBD over CRD.

Q3) Attempt Any Four of the following: **[4 + 4 + 4 + 4 = 16]**

a) Define the following terms in the design of experiment:

i) Experimental unit

ii) Blocks

b) Give the test of equality of two specified treatment effects in RBD.

c) Describe Yate's procedure of obtaining factorial effect totals for 2^2 factorial experiment.

d) What is missing plot technique? Derive an expression for single missing observation in LSD.

e) State the meaning of ANOCOVA. Give any two practical situations where it is applicable.

f) Explain what is meant by main and interaction effects in factorial experiment.

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Seat No.	

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Total No. of Pages : 3

B.Sc. (Part - III) (Semester - V) (New) Examination, April - 2017

STATISTICS

Designs of Experiments (Paper - XI)

Sub. Code : 65860

Day and Date : Thursday, 20 - 04 - 2017 **Total Marks : 40**

Time : 3.00 p.m. to 5.00 p.m.

Instructions : 1) **All questions are compulsory.**
2) **Figures to the right indicate full marks.**

Q1) Choose the correct alternative: **[8]**

a) For 5 × 5 Latin square Design the degrees of freedoms for error are ___.

i) 6 ii) 12

iii) 9 iv) 24

b) Various objects of comparison in a comparative experiment are termed as _____.

i) Blocks ii) Treatments

iii) Experimental Error iv) None of these

c) The experimental Error in LSD follows _____ distribution.

i) i.i.d. $N(0, \sigma_e^2)$ ii) i.i.d. $N(1, \sigma_e^2)$

iii) i.i.d. $N(2, \sigma_e^2)$ iv) None of these

d) When the interaction effect is confounded in all the replicates then it is called _____ confounding.

i) partially ii) complete

iii) incomplete iv) none of these

P.T.O.

e) The mathematical model used in design of experiment is _____.

i) Nonlinear ii) Linear

iii) Both (i) and (ii) iv) None of these

f) In ANOCOVA the least square estimate of β = _____.

i) Exx / Eyy ii) Exy / Exx

iii) Eyy / Exy iv) Eyy / Exx

g) A linear contrast is called a contrast of treatment means if the sum of coefficient is _____.

i) One ii) Zero

iii) – 1 iv) 2

h) _____ design is recommended in situation where an appreciable fraction of units is likely to be destroyed or fail to respond.

i) LSD ii) RBD

iii) CRD iv) none of these

Q2) Attempt any two out of three of the following: **[8 + 8]**

a) Define Randomized Block Design. Explain the analysis of the mathematical model, hypothesis to be tested, split of total sum of squares into different components and ANOVA table.

b) Define factorial experiment. State the advantages of factorial experiment over simple experiment. Give mathematical model, Null hypothesis and analysis of variance table for 2^3 factorial experiment.

c) Give the concept and definition of efficiency of a design. Derive the expression of efficiency of LSD over RBD.

Q3) Attempt any four of the following: **D-269**

[4 + 4 + 4 + 4]

a) What is missing plottechnique? Derive an expression for single missing observation in RBD.

b) Define the following terms in the design of experiment:-

i) Treatment

ii) Experimental Error

c) Describe Yate's procedure of obtaining factorial effect totals for 2^3 factorial experiment.

d) What are the three basic principles of experimental design? Explain the randomization principle.

e) State the meaning of ANOCOVA. Give any two practical situations where it is applicable.

f) Give the test of equality of two specified treatment effects in RBD.

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