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S.Y. B. Sc. Sem IV

Statistics P-II

QP Code: 65054

Solution

Q1. (a)

- 1) False. In analysis of variance one way classification, assignable cause variation consists of one part.
- 2) False. Analysis of variance two-way classification can not have rows and columns
- 3) False. Analysis of variance two way classification is used for analysis in RBD.
- 4) False. RBD with 3 treatments and 4 blocks will have 6 d.f. for error.
- 5) False. Interaction betⁿ different factors can be estimated using only factorial experiments

(b) Q 2 marks each

4) Main effect of factor C

$$= \frac{(abc) - (ab) + (ac) - (a) + (bc) - (b) + (c) - (1)}{4}$$

5) Efficiency of D_2 w.r.t D_1

$$= \frac{\text{Precision of } D_2}{\text{Precision of } D_1} = \frac{1/\sigma_2^2}{1/\sigma_1^2} = \frac{\sigma_1^2}{\sigma_2^2}$$

Q2. a) One way classification. Model - (2) Hypothesis - (1)

Distⁿ of $\frac{TSS}{\sigma^2}$, $\frac{BCSS}{\sigma^2}$, $\frac{ESS}{\sigma^2}$ - 2 mks each Test statistic - (1)

b) Model - (2) Hypotheses - (2) Partition - (6)

c) Assumptions - (3) state expectations - (4)

Justification - (3)

Q3. a) Explain principles of Design of Experiments.

Randomization (3)

Replication (3)

Local Control (2)

Application in RBD (2)

- ②
- b) Explain CRD - ③ Model - ②
Least square estimators of parameters - ⑤
- c) Describe RBD - ③ A layout of RBD - ②
Expected Errors - ⑤

- Q4 a) Explain LSP - ③ Model - ②
E(Errors) - ⑤

- ~~Q4~~ b) Factorial experiment - ③ Yates Procedure - ④
Yates table - ③

- c) Missing observation - ③ Expression for one missing obsⁿ in LSP
degrees of freedom - ② ⑤

- Q5. a) i) E(Errors) - ⑤
ii) ANOVA Table - ⑤

- b) Expression for efficiency - ⑤
Estimated efficiency - ⑤

- c) Expression for main effects and interaction effects - 2 each
ANOVA Table - ④

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