

B. Sc. Sem. 6

: નોંધ :

20 OCT 2020

૧. દરેક પ્રશ્નનો [a] અથવા [a(i)] અને [a(ii)] જ લખવાના રહેશે.  
 ૨. પ્રશ્ન : ૧[a] અથવા ૧[a(i)] અને ૧[a(ii)] તથા ૨[a] અથવા ૨[a(i)] અને ૨[a(ii)] ના 14 માર્ક્સ ના બદલે ૧૮ માર્ક્સ રહેશે.  
 ૩. પ્રશ્ન : ૩[a] અથવા ૩[a(i)] અને ૩[a(ii)] તથા ૪[a] અથવા ૪[a(i)] અને ૪[a(ii)] ના 14 માર્ક્સ ના બદલે ૧૭ માર્ક્સ રહેશે.  
 ૪. દરેક પ્રશ્નનો પ્રશ્ન નં ૧(b), પ્રશ્ન નં ૨(b), પ્રશ્ન નં ૩(b) તથા પ્રશ્ન નં ૪(b) (ટુંકા પ્રશ્નો) વિદ્યાર્થીએ લખવાના નથી.

Q1 A Give the complete analysis of variance of two-way classified data. Stating clearly- 14

- (i) The assumptions (ii) The hypothesis to be tested  
 (iii) The test statistics to be used and (iv) ANOVA Table

OR

Q1 A a) Define the following terms: 8

- i) experimental units (ii) treatments  
 iii) Extraneous factor (iv) experimental error

b) Explain the importance of Randomization, Replications and Local control in the design of experiments. 6

Q1 B Select the correct answer. 4

i) An ANOVA obtained from 4 samples, where each sample contains 7 observations. The degrees of freedom for the critical value of F are

- A 3 & 24 C 3 & 7  
 B 28 & 3 D 4 & 28

ii) The ANOVA method is used to test the equality of more than two population means at a time the test statistic is used in this method is known as:-----

- A t - test C  $\chi^2$  - test  
 B F- test D Z- test

iii) In a randomized block design each block is a complete block.

- A True C False  
 B Not decided D None

iv) The mean square error is the sum of squares divided by the ...

- A total no. of observations C Its degrees of freedom  
 B Its degrees of freedom-1 D None of the above

Q2 A Give the complete analysis of LSD. Explain the situation when it is used. State its Merits and demerits. 14

OR

Q2 A a) Outline the various steps in carrying out the ANOVA of CRD. 7

- b) Following is the yield of 4 varieties of Wheat in 3 blocks. Observations are arranged in Two ways. Test the significance of varieties and blocks. 7

Varieties	B l o c k s		
	I	II	III
I	216	209	208
II	207	207	206
III	208	205	204
IV	205	204	204

$$[F(2,6)=5.14, F(3,6)=4.76]$$

- Q2 B Select the correct answer. 4

i) In LSD the no. of treatments ,rows and columns are.....

- A Seldom equal C Usually equal  
B equal D Unequal

ii) 2x2 LSD does not exist.

- A True C False  
B Partial true D None of the above

iii) For RBD of 6 treatments and 5 blocks degrees of freedom for error is\_\_\_\_\_.

- A 20 C 12  
B 16 D None of the above

iv) In LSD with 5 x 5 observations for one missing yield degrees of freedom for error is

- A 12 C 11  
B 25 D 16

- Q3 A Derive the formula for estimating Two missing yield [for two different treatment ] in LSD .Also state ANOVA of such design. 14

OR

- Q3 A a) Describe Missing plot Technique in the design of experiment. State its advantages, why this technique is not applicable in CRD? 7

b) What is Incomplete Block Design? Define BIBD,give its example. 7  
State any two parametric relationship of BIBD.

- Q3 B Select the correct answer. 3

i) Missing Plot Technique can't be apply in case of CRD.

- A True C False  
B Partial true D None of the above

ii)In balanced incomplete block design one of the condition is

- A  $v(\lambda-1) = k(r-1)$  C  $r(v-1) = \lambda(k-1)$   
B  $\lambda(v-1) = r(k-1)$  D  $k(v-1) = r(\lambda-1)$

iii) In case of symmetrical BIBD

- A  $vr = b k$  C  $br = vk$   
B Both A & B D None of the above

Q4 A In a certain  $2^3$  factorial experiment, there are 3 factors- A and B & C. write 14  
down all treatment combinations. Derive the formula for estimating-

- i) Main effect of A , B & C
- ii) Joint effect of AB , AC , BC & ABC
- iii) ANOVA of the design

OR

Q4 A a) Explain Yate's Method for  $2^3$  factorial experiments. 7

b) What is Factorial experiment? Define Treatment Contrast and 7  
Orthogonal Contrast. Further state the formula to estimate the sum of  
square due to contrast.

Q4 B Select the correct answer. 3

i)The no. of times each experimental units is observed in a factorial  
design is known as

- |   |             |   |                        |
|---|-------------|---|------------------------|
| A | Replication | C | Experimental condition |
| B | Factor      | D | None of the above      |

ii) Different treatment contrast confounded in different replication then  
it is known as

- |   |                   |   |                     |
|---|-------------------|---|---------------------|
| A | Total confounding | C | Partial confounding |
| B | Confounding       | D | None of the above   |

iii) Treatment contrast confounded same in all the replication then it is  
known as

- |   |                     |   |                   |
|---|---------------------|---|-------------------|
| A | Partial confounding | C | Total confounding |
| B | Confounding         | D | None of the above |