Assignment-05

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment. Due on 2019-03-06, 23:59 IST.

1) As residual variance ______, F values ______.
   - decreases; decrease
   - increases; decrease
   - increases; increase
   - decreases; normalize
   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   decreases; decrease

2) A factor is said to have a main effect if, in the population:
   - the mean score at each of its levels is less than the mean score at any level of the other factor.
   - the marginal mean scores of the conditions making up the factor are not equal.
   - the mean score at each of its levels is greater than the mean score at any level of the other factor.
   - the marginal mean scores of the conditions making up the factor are equal.
   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   the marginal mean scores of the conditions making up the factor are not equal.

3) A factor is said to have a simple main effect if:
   - there is no interaction with the other factor.
   - the cell means for that factor at one particular level of the other factor are not equal.
   - the marginal means for that factor are not equal.
   - the marginal cell means for that factor are equal.
   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   the cell means for that factor at one particular level of the other factor are not equal.

4) Dr. RNS conducted a ______ factorial design to examine the effects of music and room temperature ______ on participant's memory. Participants were randomly assigned to study a list of nonsense words either listening or not listening to music in either a warm or cold room.

   __________ factorial design
   ______
   ______
   ______
   ______
   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   ______

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Score: 0
Accepted Answers:

2 x 2

5) You have just finished reading an article published by Dr. RNS and Dr. AB in which they reported

\( F(3,54) = 10.04, p = 0.01 \). What can you conclude about their experiment?

- The authors made a Type I error
- One or more of the samples came from a population with a different mean
- All of the samples came from populations with different means
- The authors made a Type II error

No, the answer is incorrect.
Score: 0
Accepted Answers:

One or more of the samples came from a population with a different mean

6) In what way do the One-Way and Two-Way ANOVA designs differ? In a one-way ANOVA,

- one can only test for the treatment effect of a single factor.
- one can test for both the main effects and interactions for two factors.
- one can only test for the treatment effects of two experimental factors.
- one can only test for the presence of the interaction effect between two experimental factors.

No, the answer is incorrect.
Score: 0
Accepted Answers:

one can only test for the treatment effect of a single factor.

7) Give the F test for the interaction effect of factors A and B.

- \( F = \frac{MS_A + MS_B}{MS_E} \)
- \( F = \frac{SS_A + SS_B}{MS_E} \)
- \( F = SS_{AB} \)
- \( F = \frac{MS_{AB}}{MS_E} \)

No, the answer is incorrect.
Score: 0
Accepted Answers:

\( F = \frac{MS_{AB}}{MS_E} \)

8) Answer Question 08 to 10 based on the information given below:

Sai Ram Pvt Ltd. manufactures three types of organic fertilizers. In one of the researches conducted at IIT Kanpur,
where they tested the fertilizers on genetically modified seeds of rice grains RA100K. The purpose of the fertilizers is to
enrich the soil and promote plant growth. The process engineering group responsible for this research is interested in
learning whether three different fertilizers differ in their properties. A factorial experiment was performed to investigate
the effect of fertilizer type and irrigation method (5cm and 10cm) on rice crop yield (q/ha). For each combination
of fertilizer type and irrigation method, three specimens of rice crops were grown, and the yield was measured. The data
from the experiment are shown in the table below:

<table>
<thead>
<tr>
<th>Fertilizers</th>
<th>5 cm ( I_0 )</th>
<th>10 cm ( I_1 )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( Y_{ij} )</td>
<td>( Y_{ij} )</td>
</tr>
<tr>
<td>Nitrogenous</td>
<td>10.55</td>
<td>12.67</td>
</tr>
<tr>
<td>Phosphates</td>
<td>15.6</td>
<td>14.9</td>
</tr>
<tr>
<td>Potassium</td>
<td>13.8</td>
<td>13.7</td>
</tr>
</tbody>
</table>
The values of the following are:
(i) Total Sum of Squares (SS_T)
(ii) Sum of Squares of Primer Types (SS_types)
(iii) Sum of Squares of Application Method (SS_methods)
(iv) Sum of Squares of Interaction (SS_interaction)
(v) Sum of Square of Errors is: (SS_errors)

(i) 40.53      (ii) 16.26      (iii) 14.36      (iv) 3.15

No, the answer is incorrect.
Score: 0
Accepted Answers:
(i) 40.53      (ii) 14.36      (iii) 16.26      (iv) 6.76      (v) 3.15

9) The values for the Degrees of Freedom of the following are:
(i) Primer Types
(ii) Application Method
(iii) Interaction
(iv) Error

(i) 2      (ii) 2      (iii) 1     (iv) 12

No, the answer is incorrect.
Score: 0
Accepted Answers:
(i) 2      (ii) 1      (iii) 2      (iv) 12

10) Which of the following statements is/are TRUE?

(i) Since f(0.05,2,12)=3.89 and f(0.05,1,12)=4.75, we conclude that the main effects of fertilizer type and irrigation method AFFECT adhesion force.

(ii) Since 12.868 > f(0.05,2,12), there is an indication of interaction between these factors.

Only I
Only II
Both I and II
None of these

No, the answer is incorrect.
Score: 0
Accepted Answers:
Both I and II