Assignment-03

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

Due on 2019-02-20, 23:59 IST.

1) Question 01 to 03 is based on the information given below:

Students were given different drug treatments before revising for their exams. Some were given a memory drug, some a placebo drug and some no treatment. The exam scores (%) are shown below for the three different groups:

<table>
<thead>
<tr>
<th>Memory Drug</th>
<th>Placebo</th>
<th>No treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>70</td>
<td>37</td>
<td>3</td>
</tr>
<tr>
<td>77</td>
<td>43</td>
<td>10</td>
</tr>
<tr>
<td>83</td>
<td>50</td>
<td>17</td>
</tr>
<tr>
<td>90</td>
<td>57</td>
<td>23</td>
</tr>
<tr>
<td>97</td>
<td>63</td>
<td>30</td>
</tr>
</tbody>
</table>

The hypothesis: The treatments will have different effects.

The Sum of Square Within Groups is:

- 1334.40
- 11155.60
- 12490.00
- None of These

No, the answer is incorrect.

Score: 0

Accepted Answers:

1334.40
No, the answer is incorrect.
Score: 0
Accepted Answers: 14

3) The Anova Co-efficient is:
- 12.00
- 8.36
- 100.32
- 50.16

No, the answer is incorrect.
Score: 0
Accepted Answers: 50.16

4) An investigator randomly assigns 30 college students into three equal size study groups (early morning, afternoon, late night) to determine if the period of the day at which people study has an effect on their retention. The students live in a controlled environment for one week, on the third day of which the experimental treatment (the study of predetermined material) is administered. The seventh day the investigator tests for retention, and in computing his analysis he sees that his MS within groups is larger than his MS among groups. What is the indication of this result?
- An error in calculation was made.
- There was more than the expected variability between groups.
- There was more variability between subjects within the same group than there was between groups.
- That there should have been additional controls in the experiment.

No, the answer is incorrect.
Score: 0
Accepted Answers: There was more variability between subjects within the same group than there was between groups.

5) In reading a scientific article you encounter the following table:

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Samples</td>
<td>722.7</td>
<td>4</td>
<td>180.68</td>
<td>15.3</td>
</tr>
<tr>
<td>Within Samples</td>
<td>473.3</td>
<td>40</td>
<td>11.83</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1196</td>
<td>44</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Further reading indicates that all sample sizes are equal. Then we know that the experimenter used
- 4 samples of size 10.
- 5 samples of size 10.
- 4 samples of size 9.
- 5 samples of size 9.

No, the answer is incorrect.
Score: 0
Accepted Answers: 5 samples of size 9.

6) Question 06 to 09 is based on the information given below:
A fisheries researcher wishes to conclude that there is a difference in mean weights of three species of fish caught in a large lake near Kanpur. The data are as follows: (Use $\alpha=0.05$)

<table>
<thead>
<tr>
<th>SPECIES</th>
<th>X</th>
<th>Y</th>
<th>Z</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.5</td>
<td>1.5</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>1</td>
<td>4.5</td>
</tr>
<tr>
<td></td>
<td>4.5</td>
<td>4.5</td>
<td>4.5</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>2</td>
<td>5.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>13</strong></td>
<td><strong>9</strong></td>
<td><strong>20.5</strong></td>
</tr>
</tbody>
</table>

The NULL Hypothesis is:

- $H_0:\beta=0$
- $H_0:\mu=0$
- $H_0:\mu(X)=\mu(Y)=\mu(Z)$
- $H_0:\beta(X)=\beta(Y)=\beta(Z)$

No, the answer is incorrect. Score: 0

**Accepted Answers:**

$H_0:\mu(X)=\mu(Y)=\mu(Z)$

7) The test statistic is:

- $t(\text{calc}) = 2.52$
- $t(\text{calc}) = 3.09$
- $F(\text{calc}) = 1.20$
- $F(\text{calc}) = 5.41$

No, the answer is incorrect. Score: 0

**Accepted Answers:**

$F(\text{calc}) = 5.41$

8) The critical value is:

- $t(0.05,9) = 2.262$
- $t(0.10,9) = 1.833$
- $F(0.05,2,9) = 4.26$
- $F(2.5,2,9) = 5.71$

No, the answer is incorrect. Score: 0

**Accepted Answers:**

$F(0.05,2,9) = 4.26$

9) What is your conclusion?

- Reject $H(O)$ because $F(\text{calc}) > F(\text{crit})$, (at least 1 pair has different means).
- Reject $H(O)$ because $t(\text{calc}) > t(\text{crit})$, (all means are different).
- Fail to reject $H(O)$ because $F(\text{calc}) < F(\text{crit})$, (insufficient evidence that means are different).
- Fail to reject $H(O)$ because $t(\text{calc}) < t(\text{crit})$, (means are equal).
An imaginary study has been conducted on the effects of three brands of laxatives on the regularity of TV actresses where each brand was tested by one actress belonging to each of 10 age groups. Results obtained included: \( F = \frac{\text{brand M.Sq.}}{\text{Error M.Sq.}} = 2.1 \) with 2 and 18 degrees of Freedom. The null hypothesis tested is that all brand effects equal zero, \( H_0: \mu(1) = \mu(2) = \mu(3) \). \( F(\text{critical}, \text{df}=2, 18, \alpha=0.05) = 3.55 \). What can we conclude about the experiment?

- We reject the null hypothesis that all brand effects are equal, since the calculated \( F \) value is smaller than the critical \( F \) value.
- We do not reject the null hypothesis that all brand effects are equal, since the calculated \( F \) value is smaller than the critical \( F \) value.
- Cannot conclude anything from the given data.
- None of these.

No, the answer is incorrect.
Score: 0
Accepted Answers:
We do not reject the null hypothesis that all brand effects are equal, since the calculated \( F \) value is smaller than the critical \( F \) value.