**1-**

**A planned study is preformed to know if there is a significance different between three methods of teaching in a primary school for teaching the basics of Mathematics . The researcher divided them into 3 different groups and after the end of the semester they are examined, and their marks are recorded as in table below:**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Method (A)** | **Method (B)** | **Method (C)** |
|  | 4 | 12 | 1 |
|  | 5 | 8 | 3 |
|  | 4 | 10 | 4 |
|  | 3 | 5 | 9 |

**If we want to know :Does this data give an evidence to say that there is a significance difference between the methods**

**1) The null hypothesis is:**

|  |  |
| --- | --- |
| (A) | $ H\_{0}:μ\_{1}=μ\_{2}=μ\_{3}$. |
| (B) | $ H\_{0}:μ\_{1}=μ\_{2}=μ\_{3}=0$. |
| (C) | $ H\_{0}:At least one of the means are not equal$. |
| (D) | None of these. |

**2-**

**A planned study is preformed to know if there is a significance different between three methods of teaching in a primary school for teaching the basics of Mathematics . The researcher divided them into 3 different groups and after the end of the semester they are examined, and their marks are recorded as in table below:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | **Method (A)** | **Method (B)** | **Method (C)** |
|  |  | 4 | 12 | 1 |
|  |  | 5 | 8 | 3 |
|  |  | 4 | 10 | 4 |
|  |  | 3 | 5 | 9 |
|  | total | 16 | 35 | 7 |

**If we want to know :Does this data give an evidence to say that there is a significance difference between the methods**

**The test statistic value is:**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| (A) | 28.58 | (B) | 4.05 | (C) | 7.06 | (D) | 57.17 |

**3-**

**A planned study is preformed to know if there is a significance different between three methods of teaching in a primary school for teaching the basics of Mathematics . The researcher divided them into 3 different groups and after the end of the semester they are examined, and their marks are recorded as in table below:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | **Method (A)** | **Method (B)** | **Method (C)** |
|  |  | 4 | 12 | 1 |
|  |  | 5 | 8 | 3 |
|  |  | 4 | 10 | 4 |
|  |  | 3 | 5 | 9 |
|  | total | 16 | 35 | 7 |

**If we want to know :Does this data give an evidence to say that there is a significance difference between the methods**

**The test statistic is:**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| (A) | F | (B) | Chi-square | (C) | Z | (D) | T |

**4-**

**If we have two factors A and B, where the factor A consists of 4 categories while the factor B consists of 5 categories. the following ANOVA table:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Source of Variation** | **Degrees of Freedom** | **Sum of Squares** | **Mean Square** | **Computed****F** |
| **Factor A** | **3** | **5.4** |  |  |
| **Factor B** | **4** |  | **21.2** | **3.2** |
| **Error** |  |  | **6.63** |  |
| **Total** | **19** | **169.8** |  |  |

**The degree of freedom of the Error is:**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| (A) | 2 | (B) | 26 | (C) | 24 | (D) | 3 |

5-

**If we have two factors A and B, where the factor A consists of 4 categories while the factor B consists of 5 categories. the following ANOVA table:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Source of Variation** | **Degrees of Freedom** | **Sum of Squares(SS)** | **Mean Square** | **Computed****f** |
| **Factor A** | **3** | **5.4** |  |  |
| **Factor B** | **4** |  | **21.2** | **3.2** |
| **Error** |  |  | **6.63** |  |
| **Total** | **19** | **169.8** |  |  |

**The sum square (SS) of factor B is:**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| (A) | 84.8 | (B) | 21.2 | (C) | 5.4 | (D) | 1.8 |

**6-**

**If we have two factors A and B, where the factor A consists of 4 categories while the factor B consists of 5 categories. the following ANOVA table:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Source of Variation** | **Degrees of Freedom** | **Sum of Squares** | **Mean Square** | **Computed****f** |
| **Factor A** | **3** | **5.4** |  |  |
| **Factor B** | **4** |  | **21.2** | **3.2** |
| **Error** |  |  | **6.63** |  |
| **Total** | **19** | **169.8** |  |  |

**The test statistic value if we want to test is there difference between 4 categories of factor A:**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| (A) | 0.27 | (B) | 3.2 | (C) | 24 | (D) | 3 |

**7-**

**One of these is a assumption of ANOVA Test is :**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| (A) | Independent random Samples from the populations | (B) | Treatments populations are normally distribution with different variances | (C) | Equal samples size | (D) | Treatments populations are not normally distribution |

**8-**

 **Independent random sample of the population of 3 countries have been measuring whether a person writes with his right hand or left hand were the result as of the following**

|  |  |  |
| --- | --- | --- |
| **Left Hand**  | **Right Hand** | **country** |
| 30 | 170 | **saudi** |
| 2 | 198 | **kuwait** |
| 20 | 180 | **Oman** |

**If we Test whether if these 3 countries have the same proportions of using the right hand and left for writing**

**The appropriate test is**:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| (A) | Goodness-of-fit test | (B) | Independence test | (C) | Homogeneity test | (D) | $$F$$ |

**9-**

**Independent random sample of the population of 3 countries have been measuring whether a person writes with his right hand or left hand were the result as of the following**

|  |  |  |
| --- | --- | --- |
| **Left Hand**  | **Right Hand** | **country** |
| 30 | 170 | **saudi** |
| 2 | 198 | **kuwait** |
| 20 | 180 | **Oman** |

**If we Test whether if these 3 countries have the same proportions of using the right hand and left for writing**

**the expected frequency of Saudi and write with left hand**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| (A) | 182.67 | (B) | 17.33 | (C) | 170 | (D) | 30 |

**10-**

**Independent random sample of the population of 3 countries have been measuring whether a person writes with his right hand or left hand were the result as of the following**

|  |  |  |
| --- | --- | --- |
| **Left Hand**  | **Right Hand** | **country** |
| 30 | 170 | **Saudi** |
| 2 | 198 | **Kuwait** |
| 20 | 180 | **Oman** |

**If we Test whether if these 3 countries have the same proportions of using the right hand and left for writing**

**The observed frequency of Saudi and write with right hand**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| (A) | 182.67 | (B) | 17.33 | (C) | 170 | (D) | 30 |

**11-**

**Independent random sample of the population of 3 countries have been measuring whether a person writes with his right hand or left hand were the result as of the following**

|  |  |  |
| --- | --- | --- |
| **Left Hand**  | **Right Hand** | **country** |
| 30 | 170 | **saudi** |
| 2 | 198 | **kuwait** |
| 20 | 180 | **Oman** |

**Test whether if these 3 countries are homogeneous In the rates of use of the right hand and left for writing**

**If the test statistic** $χ^{2}=$ **25.44 and** $α=0.01$ **then the decision**

|  |  |  |  |
| --- | --- | --- | --- |
| (A) | Reject $H\_{0}$ and conclude that countries are homogeneous  | (B) | Reject $H\_{0}$ and conclude that countries are not homogeneous  |
|  |  |  |  |
| (C) | Fail to Reject $H\_{0}$ and conclude that countries are homogeneous  | (D) | Fail to Reject $H\_{0}$ and conclude that countries are homogeneous  |

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |

**12-**

**Consider tossing a coin 100 times and each outcome is recorded. We want to test if the coin is fair or not.**

1. **The hypothesis is**

|  |  |  |  |
| --- | --- | --- | --- |
| (A) | $H\_{0}:$ The coin is fair or $f\left(H\right)=f\left(T\right)=\frac{1}{2}$$H\_{1}:$ The coin is not fair or at least one proportion $\ne \frac{1}{2}$ | (B) | $H\_{0}:$ The coin is not fair$H\_{1}:$ The coin is fair |
| (C) | $$H\_{0}:f\left(H\right)=f\left(T\right)=\frac{1}{100}$$$H\_{1}:$ At least one proportion$\ne \frac{1}{100}$ | (D) | $H\_{0}:$ The coin is not fair or $f\left(H\right)\ne f\left(T\right)\ne \frac{1}{100}$$H\_{1}:$ The coin is fair or $f\left(H\right)=f\left(T\right)$=$\frac{1}{100}$ |

**13-**

**Consider tossing a coin 100 times and each outcome is recorded. We want to test if the coin is fair or not.**

 **The degree of freedom of the value of the test statistic is:**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| (A) | 6 | (B) | 1 | (C) | 2 | (D) | 89 |

**14-**

**Consider tossing a coin 100 times and each outcome is recorded. We want to test if the coin is fair or not. If the observed number of times of getting a head (H) is 60. The goodness of fit test statistic is**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| (A)16 |   | (B)800 |   | (C) |  8 | (D)50 |   |