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Chapter 11 Test
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DIRECTIONS: For this multiple-choice test, select the most appropriate answer for each statement or question.

1. A contingency table is also known as a(n) __________ or two-way table.
   a) upside down table
   b) cross-tabulation table
   c) lined table
   d) xy table

2. To perform a chi-square test of independence, the degrees of freedom are equal to which of the following?
   a) \((r + 1)(c - 1)\)
   b) \((r - 1)(c + 1)\)
   c) \((r + 1)(c + 1)\)
   d) \((r - 1)(c - 1)\)

3. Given the following contingency table, calculate the \(X^2\) test statistic.

<table>
<thead>
<tr>
<th></th>
<th>Nurse</th>
<th>Doctor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>14</td>
<td>73</td>
</tr>
<tr>
<td>Female</td>
<td>86</td>
<td>27</td>
</tr>
</tbody>
</table>

   a) 70.82
   b) 3.91
   c) 11.23
   d) 2.47
4. A chi-square test of independence will always be a one-tailed test with area in the right tail.
   a) True
   b) False

5. When conducting a chi-square test of independence, the null hypothesis is always rejected if the test statistic is less than the critical value.
   a) True
   b) False

6. An ANOVA is a statistical procedure used to compare the __________ of three or more independent populations.
   a) means
   b) variances
   c) proportions
   d) modes

7. The F-distribution is skewed left.
   a) True
   b) False

8. When performing an ANOVA, the F test statistic will always be greater than or equal to 0.
   a) True
   b) False
9. When performing an ANOVA, F test statistics close to 1 suggest that there is sufficient evidence to reject the null hypothesis.
   a) True
   b) False

10. A researcher decides to perform an ANOVA using the data below. Assuming the populations are normally distributed, the samples are independent and the population variances are equal, compute the F test statistic.

<table>
<thead>
<tr>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>10</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>19</td>
<td>15</td>
<td>25</td>
</tr>
</tbody>
</table>

a) 2.88
b) 2.10
c) 5.64
d) 10.33
Answers

1. Cross-tabulation table
2. \((r - 1)(c - 1)\)
3. 70.82
4. True
5. False
6. Means
7. False
8. True
9. False
10. 2.10