* **Question 1**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | In the past, 35% of the students at ABC University were in the Business College, 35% of the students were in the Liberal Arts College, and 30% of the students were in the Education College. To see whether or not the proportions have changed, a sample of 300 students from the university was taken. Ninety of the sample students are in the Business College, 120 are in the Liberal Arts College, and 90 are in the Education College. This problem is an example of a |  |  |  |
| |  |  | | --- | --- | | Answers: | a.  multinomial population. | |  | b.  Marascuilo procedure. | |  | c.  test for independence. | |  | d.  *z* test for proportions. | |  |  |  |

* **Question 2**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | The sampling distribution for a goodness of fit test is the |  |  |  |
| |  |  | | --- | --- | | Answers: | a.  normal distribution. | |  | b.  Poisson distribution. | |  | c.  *t* distribution. | |  | d.  chi-square distribution. | |  |  |  |

* **Question 3**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | The owner of a car wash wants to see if the arrival rate of cars follows a Poisson distribution. In order to test the assumption of a Poisson distribution, a random sample of 150 ten-minute intervals was taken. You are given the following observed frequencies:   |  |  | | --- | --- | | **Number of Cars Arriving in a 10-Minute Interval** | **Frequency** | | 0 | 3 | | 1 | 10 | | 2 | 15 | | 3 | 23 | | 4 | 30 | | 5 | 24 | | 6 | 20 | | 7 | 13 | | 8 | 8 | | 9 or more | 4 | |  | 150 |   ​  The calculated value for the test statistic equals |  |  |  |
| |  |  | | --- | --- | | Answers: | a.  2.89. | |  | b.  1.72. | |  | c.  3.11. | |  | d.  .18. | |  |  |  |

* **Question 4**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | A population where each of its element is assigned to one and only one of several classes or categories is a |  |  |  |
| |  |  | | --- | --- | | Answers: | a.  multinomial population. | |  | b.  Poisson population. | |  | c.  normal population. | |  | d.  binomial population. | |  |  |  |

* **Question 5**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | When individuals in a sample of 150 were asked whether or not they supported capital punishment, the following information was obtained.   |  |  | | --- | --- | | **Do you support capital punishment?** | **Number of individuals** | | Yes | 40 | | No | 60 | | No Opinion | 50 |   ​  We are interested in determining whether or not the opinions of the individuals (as to Yes, No, and No Opinion) are uniformly distributed. The *p*-value is |  |  |  |
| |  |  | | --- | --- | | Answers: | a.  larger than .1. | |  | b.  between .01 and .05. | |  | c.  between .05 and .1. | |  | d.  less than .01. | |  |  |  |

* **Question 6**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | In the past, 35% of the students at ABC University were in the Business College, 35% of the students were in the Liberal Arts College, and 30% of the students were in the Education College. To see whether or not the proportions have changed, a sample of 300 students from the university was taken. Ninety of the sample students are in the Business College, 120 are in the Liberal Arts College, and 90 are in the Education College. The expected frequency for the Business College is |  |  |  |
| |  |  | | --- | --- | | Answers: | a.  .3. | |  | b.  90. | |  | c.  105. | |  | d.  .35. | |  |  |  |

* **Question 7**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | In the past, 35% of the students at ABC University were in the Business College, 35% of the students were in the Liberal Arts College, and 30% of the students were in the Education College. To see whether or not the proportions have changed, a sample of 300 students from the university was taken. Ninety of the sample students are in the Business College, 120 are in the Liberal Arts College, and 90 are in the Education College. The hypothesis is to be tested at the 5% level of significance. The critical value from the table equals |  |  |  |
| |  |  | | --- | --- | | Answers: | a.  7.815. | |  | b.  9.348. | |  | c.  5.991. | |  | d.  7.378. | |  |  |  |

* **Question 8**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | An important application of the chi-square distribution is |  |  |  |
| |  |  | | --- | --- | | Answers: | a.  making inferences about a single population variance. | |  | b.  testing for goodness of fit. | |  | c.  testing for the independence of two categorical variables. | |  | d.  All of these alternatives are correct. | |  |  |  |

* **Question 9**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | Last school year, the student body of a local university consisted of 30% freshmen, 24% sophomores, 26% juniors, and 20% seniors. A sample of 300 students taken from this year's student body showed the following number of students in each classification.   |  |  | | --- | --- | | Freshmen | 83 | | Sophomores | 68 | | Juniors | 85 | | Seniors | 64 |   ​  We are interested in determining whether or not there has been a significant change in the classifications between the last school year and this school year. At a .05 level of significance, the null hypothesis |  |  |  |
| |  |  | | --- | --- | | Answers: | a.  should not be rejected. | |  | b.  should be rejected. | |  | c.  was designed wrong. | |  | d.  cannot be tested. | |  |  |  |

* **Question 10**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | You want to test whether or not the following sample of 30 observations follows a normal distribution. The mean of the sample equals 11.83 and the standard deviation equals 4.53.   |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | 2 | 3 | 5 | 5 | 7 | 8 | 8 | 9 | 9 | 10 | | 11 | 11 | 12 | 12 | 12 | 12 | 13 | 13 | 13 | 14 | | 15 | 15 | 15 | 16 | 16 | 17 | 17 | 18 | 18 | 19 |   ​  The *p*-value is |  |  |  |
| |  |  | | --- | --- | | Answers: | a.  between .05 and .1. | |  | b.  between .025 and .05. | |  | c.  greater than .1. | |  | d.  less than .005. | |  |  |  |

* **Question 11**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | Last school year, the student body of a local university consisted of 30% freshmen, 24% sophomores, 26% juniors, and 20% seniors. A sample of 300 students taken from this year's student body showed the following number of students in each classification.   |  |  | | --- | --- | | Freshmen | 83 | | Sophomores | 68 | | Juniors | 85 | | Seniors | 64 |   ​  We are interested in determining whether or not there has been a significant change in the classifications between the last school year and this school year. The expected number of freshmen is |  |  |  |
| |  |  | | --- | --- | | Answers: | a.  90. | |  | b.  83. | |  | c.  30. | |  | d.  10. | |  |  |  |

* **Question 12**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | Last school year, the student body of a local university consisted of 30% freshmen, 24% sophomores, 26% juniors, and 20% seniors. A sample of 300 students taken from this year's student body showed the following number of students in each classification.   |  |  | | --- | --- | | Freshmen | 83 | | Sophomores | 68 | | Juniors | 85 | | Seniors | 64 |   ​  We are interested in determining whether or not there has been a significant change in the classifications between the last school year and this school year. The calculated value for the test statistic equals |  |  |  |
| |  |  | | --- | --- | | Answers: | a.  .65. | |  | b.  1.66. | |  | c.  6.66. | |  | d.  .54. | |  |  |  |

* **Question 13**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | The degrees of freedom for a data table with 12 rows and 12 columns is |  |  |  |
| |  |  | | --- | --- | | Answers: | a.  144. | |  | b.  121. | |  | c.  120. | |  | d.  12. | |  |  |  |

* **Question 14**

0 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | The properties of a multinomial experiment include all of the following except​ |  |  |  |
| |  |  | | --- | --- | | Answers: | a.  ​the probability of each outcome can change from trial to trial. | |  | b.  ​three or more outcomes are possible on each trial. | |  | c.  ​the experiment consists of a sequence of *n* identical trials. | |  | d.  ​the trials are independent. | |  |  |  |

* **Question 15**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | The test for goodness of fit, test of independence, and test of multiple proportions are designed for use with​ |  |  |  |
| |  |  | | --- | --- | | Answers: | a.  ​ordinal data. | |  | b.  ​categorical data. | |  | c.  ​bivariate data. | |  | d.  ​quantitative data. | |  |  |  |

* **Question 16**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | You want to test whether or not the following sample of 30 observations follows a normal distribution. The mean of the sample equals 11.83 and the standard deviation equals 4.53.   |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | 2 | 3 | 5 | 5 | 7 | 8 | 8 | 9 | 9 | 10 | | 11 | 11 | 12 | 12 | 12 | 12 | 13 | 13 | 13 | 14 | | 15 | 15 | 15 | 16 | 16 | 17 | 17 | 18 | 18 | 19 |   ​  The number of intervals or categories used to test the hypothesis for this problem is |  |  |  |
| |  |  | | --- | --- | | Answers: | a.  4. | |  | b.  5. | |  | c.  6. | |  | d.  10. | |  |  |  |

* **Question 17**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | The owner of a car wash wants to see if the arrival rate of cars follows a Poisson distribution. In order to test the assumption of a Poisson distribution, a random sample of 150 ten-minute intervals was taken. You are given the following observed frequencies:   |  |  | | --- | --- | | **Number of Cars Arriving in a 10-Minute Interval** | **Frequency** | | 0 | 3 | | 1 | 10 | | 2 | 15 | | 3 | 23 | | 4 | 30 | | 5 | 24 | | 6 | 20 | | 7 | 13 | | 8 | 8 | | 9 or more | 4 | |  | 150 |   The *p*-value is |  |  |  |
| |  |  | | --- | --- | | Answers: | a.  less than .01. | |  | b.  between .05 and .1. | |  | c.  greater than .1. | |  | d.  between .025 and .05. | |  |  |  |

* **Question 18**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | The table below gives beverage preferences for random samples of teens and adults.   |  |  |  |  | | --- | --- | --- | --- | |  | **Teens** | **Adults** | **Total** | | Coffee | 50 | 200 | 250 | | Tea | 100 | 150 | 250 | | Soft Drink | 200 | 200 | 400 | | Other | 50 | 50 | 100 | |  | 400 | 600 | 1000 |   ​  We are asked to test for independence between age (i.e., adult and teen) and drink preferences. With a .05 level of significance, the critical value for the test is |  |  |  |
| |  |  | | --- | --- | | Answers: | a.  7.815. | |  | b.  5.991. | |  | c.  14.067. | |  | d.  15.507. | |  |  |  |

* **Question 19**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | The table below gives beverage preferences for random samples of teens and adults.   |  |  |  |  | | --- | --- | --- | --- | |  | **Teens** | **Adults** | **Total** | | Coffee | 50 | 200 | 250 | | Tea | 100 | 150 | 250 | | Soft Drink | 200 | 200 | 400 | | Other | 50 | 50 | 100 | |  | 400 | 600 | 1000 |   ​  We are asked to test for independence between age (i.e., adult and teen) and drink preferences. The test statistic for this test of independence is |  |  |  |
| |  |  | | --- | --- | | Answers: | a.  62.5. | |  | b.  0. | |  | c.  82.5. | |  | d.  8.4. | |  |  |  |

* **Question 20**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | If there are three or more populations, then it is |  |  |  |
| |  |  | | --- | --- | | Answers: | a.  possible to test for equality of three or more population proportions. | |  | b.  impossible to test for equality of the three population proportions, because chi-square tests deal with only two populations. | |  | c.  customary to use a *t* distribution to test for equality of the three population proportions. | |  | d.  reasonable to test for equality of multiple population proportions using chi-square lower tail tests. | |  |  |  |

* **Question 21**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | A statistical test conducted to determine whether to reject or not reject a hypothesized probability distribution for a population is known as a |  |  |  |
| |  |  | | --- | --- | | Answers: | a.  comparison test. | |  | b.  probability test. | |  | c.  goodness of fit test. | |  | d.  normality test. | |  |  |  |

* **Question 22**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | In the past, 35% of the students at ABC University were in the Business College, 35% of the students were in the Liberal Arts College, and 30% of the students were in the Education College. To see whether or not the proportions have changed, a sample of 300 students from the university was taken. Ninety of the sample students are in the Business College, 120 are in the Liberal Arts College, and 90 are in the Education College. The calculated value for the test statistic equals |  |  |  |
| |  |  | | --- | --- | | Answers: | a.  4.38. | |  | b.  4.29. | |  | c.  .75. | |  | d.  .01. | |  |  |  |

* **Question 23**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | Last school year, the student body of a local university consisted of 30% freshmen, 24% sophomores, 26% juniors, and 20% seniors. A sample of 300 students taken from this year's student body showed the following number of students in each classification.   |  |  | | --- | --- | | Freshmen | 83 | | Sophomores | 68 | | Juniors | 85 | | Seniors | 64 |   ​  We are interested in determining whether or not there has been a significant change in the classifications between the last school year and this school year. The *p*-value is |  |  |  |
| |  |  | | --- | --- | | Answers: | a.  between .025 and .05. | |  | b.  less than .005. | |  | c.  between .05 and .1. | |  | d.  greater than .1. | |  |  |  |

* **Question 24**

0 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | The owner of a car wash wants to see if the arrival rate of cars follows a Poisson distribution. In order to test the assumption of a Poisson distribution, a random sample of 150 ten-minute intervals was taken. You are given the following observed frequencies:   |  |  | | --- | --- | | **Number of Cars Arriving in a 10-Minute Interval** | **Frequency** | | 0 | 3 | | 1 | 10 | | 2 | 15 | | 3 | 23 | | 4 | 30 | | 5 | 24 | | 6 | 20 | | 7 | 13 | | 8 | 8 | | 9 or more | 4 | |  | 150 |   ​  At the .05 level of significance, the conclusion of the test is that the |  |  |  |
| |  |  | | --- | --- | | Answers: | a.  null hypothesis cannot be rejected. | |  | b.  arrival of cars does not follow a Poisson distribution. | |  | c.  10-minute intervals follow a Poisson distribution. | |  | d.  arrival of cars has no distribution. | |  |  |  |

* **Question 25**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | The degrees of freedom for a table with 6 rows and 3 columns is |  |  |  |
| |  |  | | --- | --- | | Answers: | a.  18. | |  | b.  6. | |  | c.  15. | |  | d.  10. | |  |  |  |

* **Question 26**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | The degrees of freedom for a data table with 10 rows and 11 columns is |  |  |  |
| |  |  | | --- | --- | | Answers: | a.  100. | |  | b.  21. | |  | c.  110. | |  | d.  90. | |  |  |  |

* **Question 27**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | The following table shows the number of individuals in a sample of 300 who indicated they support the new tax proposal.   |  |  | | --- | --- | | **Political Party** | **Support** | | Democrats | 100 | | Republicans | 120 | | Independents | 80 |   ​  We are interested in determining whether or not the opinions of the individuals of the three groups are uniformly distributed. The calculated value for the test statistic equals |  |  |  |
| |  |  | | --- | --- | | Answers: | a.  0. | |  | b.  2. | |  | c.  8. | |  | d.  4. | |  |  |  |

* **Question 28**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | When individuals in a sample of 150 were asked whether or not they supported capital punishment, the following information was obtained.   |  |  | | --- | --- | | **Do you support capital punishment?** | **Number of individuals** | | Yes | 40 | | No | 60 | | No Opinion | 50 |   ​  We are interested in determining whether or not the opinions of the individuals (as to Yes, No, and No Opinion) are uniformly distributed. The conclusion of the test at the 5% level of significance is that the |  |  |  |
| |  |  | | --- | --- | | Answers: | a.  distribution is uniform. | |  | b.  null hypothesis cannot be rejected. | |  | c.  distribution might have been normal. | |  | d.  Marascuilo procedure is more applicable. | |  |  |  |

* **Question 29**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | When individuals in a sample of 150 were asked whether or not they supported capital punishment, the following information was obtained.   |  |  | | --- | --- | | **Do you support capital punishment?** | **Number of individuals** | | Yes | 40 | | No | 60 | | No Opinion | 50 |   ​  We are interested in determining whether or not the opinions of the individuals (as to Yes, No, and No Opinion) are uniformly distributed. The calculated value for the test statistic equals |  |  |  |
| |  |  | | --- | --- | | Answers: | a.  -2. | |  | b.  20. | |  | c.  4. | |  | d.  2. | |  |  |  |

* **Question 30**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | You want to test whether or not the following sample of 30 observations follows a normal distribution. The mean of the sample equals 11.83 and the standard deviation equals 4.53.   |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | 2 | 3 | 5 | 5 | 7 | 8 | 8 | 9 | 9 | 10 | | 11 | 11 | 12 | 12 | 12 | 12 | 13 | 13 | 13 | 14 | | 15 | 15 | 15 | 16 | 16 | 17 | 17 | 18 | 18 | 19 |   ​  The expected frequency in the 3rd interval is |  |  |  |
| |  |  | | --- | --- | | Answers: | a.  4. | |  | b.  5. | |  | c.  3. | |  | d.  10. | |  |  |  |

* **Question 31**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | The table below gives beverage preferences for random samples of teens and adults.   |  |  |  |  | | --- | --- | --- | --- | |  | **Teens** | **Adults** | **Total** | | Coffee | 50 | 200 | 250 | | Tea | 100 | 150 | 250 | | Soft Drink | 200 | 200 | 400 | | Other | 50 | 50 | 100 | |  | 400 | 600 | 1000 |   ​  We are asked to test for independence between age (i.e., adult and teen) and drink preferences. The expected number of adults who prefer coffee is |  |  |  |
| |  |  | | --- | --- | | Answers: | a.  150. | |  | b.  .33. | |  | c.  .25. | |  | d.  200. | |  |  |  |

* **Question 32**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | You want to test whether or not the following sample of 30 observations follows a normal distribution. The mean of the sample equals 11.83 and the standard deviation equals 4.53.   |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | 2 | 3 | 5 | 5 | 7 | 8 | 8 | 9 | 9 | 10 | | 11 | 11 | 12 | 12 | 12 | 12 | 13 | 13 | 13 | 14 | | 15 | 15 | 15 | 16 | 16 | 17 | 17 | 18 | 18 | 19 |   ​  The calculated value for the test statistic equals |  |  |  |
| |  |  | | --- | --- | | Answers: | a.  0. | |  | b.  6. | |  | c.  1.67. | |  | d.  2. | |  |  |  |

* **Question 33**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | The following table shows the number of individuals in a sample of 300 who indicated they support the new tax proposal.   |  |  | | --- | --- | | **Political Party** | **Support** | | Democrats | 100 | | Republicans | 120 | | Independents | 80 |   ​  We are interested in determining whether or not the opinions of the individuals of the three groups are uniformly distributed. The number of degrees of freedom associated with this problem is |  |  |  |
| |  |  | | --- | --- | | Answers: | a.  300. | |  | b.  2. | |  | c.  299. | |  | d.  3. | |  |  |  |

* **Question 34**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | The test statistic for goodness of fit has a chi-square distribution with *k* - 1 degrees of freedom provided that the expected frequencies for all categories are​ |  |  |  |
| |  |  | | --- | --- | | Answers: | a.  ​2*k*. | |  | b.  ​5 or more. | |  | c.  ​10 or more. | |  | d.  *​k* or more. | |  |  |  |

* **Question 35**

0.5 out of 0.5 points

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | | |
|  | The following table shows the number of individuals in a sample of 300 who indicated they support the new tax proposal.   |  |  | | --- | --- | | **Political Party** | **Support** | | Democrats | 100 | | Republicans | 120 | | Independents | 80 |   ​  We are interested in determining whether or not the opinions of the individuals of the three groups are uniformly distributed. The expected frequency for each group is |  |  |  |
| |  |  | | --- | --- | | Answers: | a.  .333. | |  | b.  .50. | |  | c.  50. | |  | d.  100. | |  |  |  |

Wednesday, March 4, 2020 8:39:02 PM PST