

## QUIZ 4

1. A highway superintendent states that five bridges into a city are used in the ratio 2:3:3:4:6 during the morning rush hour. A highway study of a random sample of 6000 cars indicates that 720, 970, 1013, 1380, and 1917 cars use the five bridges, respectively. At what significance level can the superintendent's claim be rejected?
  - a. 1%
  - b. 2%, but not 1%
  - c. 2.5%, but not 2%
  - d. 5%, but not 2.5%
  - e. 10%, but not 8%
2. Two methods are used to measure the business acumen expressed by heroines of romance novels. The mean of method 1 is 88.6 with a variance of 109.63 in a sample of size 41. The mean of method 2 is 85.1 with a variance of 65.99 in a sample of size 21. Before you test if the means of these two methods are the same, you should test if they possess homogeneous variances. Find the corresponding test statistic and the critical value at 5%.
  - a. 1.66, 1.99
  - b. 1.66, 1.84
  - c. 0.83, 1.99
  - d. 0.83, 1.84
  - e. None of the above
3. You would like to estimate the percentage of "regular users of vitamins" in a large population and you would like your estimate to be accurate to within 4 percentage points, 19 times out of 20. How large should your sample size be?
  - a. 600
  - b. 601
  - c. 420
  - d. 421
  - e. None of the above
4. Each person in a random sample of 50 was asked to state his/her sex and preferred color. The resulting frequencies are shown below. Carry out a chi-square test is used to test the null hypothesis that sex and preferred color are independent and find test statistic. Where is the p-value?

	Red	Blue	Green
Male	5	14	6
Female	15	6	4

- a.  $p < 0.01$
- b.  $0.01 < p < 0.02$
- c.  $0.02 < p < 0.025$
- d.  $0.025 < p < 0.05$
- e.  $p > 0.05$