

## QUIZ 3

1. A statistical procedure to estimate the mean shell thickness of eggs from chickens contaminated with PCBs obtains a point estimate of 0.70 mm and an estimated standard error of .05 mm. This means:
  - a. The standard deviation of actual shell thickness in the sample was 0.05 mm.
  - b. We're 95% confident that the sample mean shell thickness is accurate to within 0.05 mm
  - c. An estimate of the standard deviation of the sample mean shell thickness over repeated samples is 0.05 mm
  - d. The standard deviation of the population mean over all eggs is about 0.05 mm
  - e. An approximate 95% confidence interval for the sample mean shell thickness is  $0.70\text{mm} \pm 0.10\text{mm}$
2. A telephone company's records indicate that private customers pay on average 17.10 per month for long-distance telephone calls. A random sample of 10 customers' bills during a given month produced a sample mean of 22.10 expended for long-distance calls and a sample variance of 45. A 5% significance test is to be performed to determine if the mean level of billing for long distance calls per month is in excess of 17.10. The calculated value of the test statistic and the critical value respectively are
  - a. 2.36, 1.8331
  - b. 1.17, 2.2622
  - c. 2.36, 2.2622
  - d. 1.17, 1.8331
  - e. 0.025, 1.8125
3. In a study of iron deficiency among infants, random samples of infants following different feeding programs were compared. One group contained eight breast-fed infants had the average hemoglobin level of 13.3 with standard deviation of 1.7, while ten children in another group were fed by a standard baby formula without any iron supplements and had the average hemoglobin level of 12.4 with standard deviation of 1.8. Establish a 98% confidence interval for the mean difference in hemoglobin level between the two populations of infants. Use equal variances assumption.
  - a.  $0.9 \pm 2.15$
  - b.  $0.9 \pm 2.49$
  - c.  $0.9 \pm 4.53$
  - d.  $0.9 \pm 5.26$
  - e. None of the above
4. A large supermarket chain will increase its stock of bakery products if more than 20% of its customers are purchasers of bakery products. A random sample of 100 customers found 28% purchased bakery items. A 5% significance test is conducted to determine if the chain should increase its bakery stock. Should the supermarket chain increase its stock of bakery products?
  - a. No, because p-value is 0.0228
  - b. Yes, because p-value is 0.0228
  - c. No, because p-value is 0.0374
  - d. Yes, because p-value is 0.0374
  - e. None of the above