Advanced Statistics Chapter 8 Quiz review 1 Name :

1. A marketing consultant wants to estimate the proportion of all shoppers at a certain mall who make at least one purchase. He stands at a mall exit for two hours on a weekday afternoon and flips a coin each time a shopper leaves. If the coin comes up heads, he asks them if they have made any purchases during this visit. After two hours, he has 132 responses, 104 of whom made a purchase, What condition for constructing a confidence interval for a proportion has the consultant failed to satisfy ?

   (A) $n\hat{p} \geq 10$

   (B) $n(1-\hat{p}) \geq 10$

   (C) $n \geq 30$

   (D) The data is a random sample of the population of interest

   (E) The sample is less than 10% of the population of interest

2. The report of a sample survey of 1,014 adults says " With 95% confidence, between 9% and 15% of all Americans expect to spend more money on gifts this year than last year ". What does the phrase "95% confidence" mean ?

   (A) 95% of all Americans will spend between 9% and 15% more than what they spent last year

   (B) 9% to 15 % of all Americans will spend 95% of what they spent last year

   (C) There is a 95% chance that the percent who expect to spend more is between 9% and 15%

   (D) The method used to get the interval from 9% to 15%, when used over and over, produces intervals that include the true population percentage about 95% of the time

   (E) We can be 95% confident that the method used to get the interval always gives the right answer

3. We have calculated a 95% confidence interval and would prefer for our next confidence interval to have a smaller margin of error without losing any confidence. In order to do this, we can

I Change the critical value to a smaller number

II take a larger sample

III take a smaller sample.

(A) I only (B) II only (C) III only

(D) I and II (E) I and III

4. Which is true about a 98% confidence interval for a population proportion based on a given sample ?

I We are 98% confident that other sample proportions will be in our interval

II There is a 98% chance that our interval contains the population proportion

III The interval is wider than a 95% confidence interval

(A) None (B) I only (C) II only

(D) III only (E) I and II

5. Some scientists believe that a new drug would benefit about half of all people with a certain blood disorder. To estimate the proportion of patients who would benefit from taking the drug, the scientists will administer it to a random sample of patients who have the blood disorder. What sample size is needed so that the 95% confidence interval will have a margin of error of no more than 3%?

(A) 748

(B) 1068

(C) 1503

(D) 2056

(E) 2401

6. A state's Department of Education reports that 12% of the high school students in that state attend private high schools. The State University wonders if the percentage is the same in their applicant pool. Admissions officers plan to check a random sample of the over 10,000 applications on file to estimate the percentage of students applying for admission who attend private schools.
The admissions officers select a random sample of 450 applicants and find that 46 of those students attend private schools. Create a 90% confidence interval.

(a) State the parameter our confidence interval will estimate.

(b) Identify each of the conditions that must be met to use this procedure, and explain how you know that each one has been satisfied.

(c) Find the appropriate critical value and standard error of the sample proportion.

(d) Give the 90% confidence interval.

(e) Interpret the confidence interval constructed in part (d) in the context of the problem.

(f) Explain what 90% confidence means in this context.

(g) Should the admissions officers conclude that the percentage of private school students in their applicant pool is lower than the statewide enrollment rate of 12% ? Explain.

TOTAL : /25