Chapter 5 Review Questions

Answer the following multiple choice questions:

1. What do we call a sample that consists of the entire population?
   (a) A stratum
   (b) A multistage sample
   (c) A mistake. A sample can never be the entire population.
   (d) A census
   (e) None of the above. The answer is _________________________.

2. A member of Congress wants to know what his constituents think of proposed legislation on health insurance. His staff reports that 228 letters have been received on the subject, of which 193 oppose the legislation. What is the population in this situation?
   (a) The constituents
   (b) The 228 letters received
   (c) The 193 opposing the legislation
   (d) Congress
   (e) None of the above. The answer is ____________________________.

3. Which of the following is a method for improving the accuracy of a sample?
   (a) Use no more than 3 or 4 words in any question
   (b) When possible, avoid the use of human interviewers, relying on computerized dialing instead
   (c) Use large sample sizes, assuming the sample is not biased.
   (d) Use smaller sample sizes, assuming the sample is not biased.
   (e) None of the above. The answer is ____________________________.

4. We say that the design of a study is biased if which of the following is true?
   (a) A racial or sexual preference is suspected
   (b) Random placebos have been used
   (c) Certain outcomes are systematically favored
   (d) The correlation is greater than 1 or less than –1
   (e) None of the above. The answer is ____________________________.

5. Control groups are used in experiments in order to . . .
   (a) Control the effects of lurking variables such as the placebo effect
   (b) Control the subjects of a study so as to insure all participate equally
   (c) Guarantee that someone other than the investigators, who have a vested interest in the outcome, control how the experiment is conducted
   (d) Achieve a proper and uniform level of randomization
   (e) None of the above. The answer is ____________________________.

A chemical engineer is designing the production process for a new product. The chemical reaction that produces the product may have a higher or lower yield depending on the temperature and the stirring rate in the vessel in which the reaction takes place. The engineer decides to investigate the effects of combinations of two temperatures (50˚C and 60˚C) and three stirring rates (60 rpm, 90 rpm, and 120 rpm) on the yield of the process. Ten batches of feedstock will be processed at each combination of temperature and stirring rate.

6. What are the experimental units?
   (a) The two temperatures (50˚C and 60˚C)
   (b) The three stirring rates (60 rpm, 90 rpm, and 120 rpm)
   (c) The two temperatures and the three stirring rates
   (d) The batches of feedstock
   (e) None of the above. The answer is ____________________________.
7. Identify all factors (explanatory variables).
   (a) The two temperatures (50˚C and 60˚C)
   (b) The three stirring rates (60 rpm, 90 rpm, and 120 rpm)
   (c) The temperatures and the stirring rates
   (d) The batches of feedstock
   (e) None of the above. The answer is __________________________.

8. What is the response variable?
   (a) The two temperatures (50˚C and 60˚C)
   (b) The three stirring rates (60 rpm, 90 rpm, and 120 rpm)
   (c) The two temperatures and the three stirring rates
   (d) The batches of feedstock
   (e) None of the above. The answer is ______________________________.

9. How many treatments are there?
   (a) 2 
   (b) 3 
   (c) 5 
   (d) 6 
   (e) None of the above. The answer is ______________________________.

10. How many experimental units are needed?
    (a) 2 
    (b) 3 
    (c) 5 
    (d) 6 
    (e) None of the above. The answer is ______________________________.

Answers:
1. d
2. a
3. c
4. c
5. a
6. d
7. c
8. e, yield
9. d
10. e, 60