Sample Answers to In-Text Questions

# Chapter 4 Supplement: Reliability

## Discussion Questions

1. What is the meaning of the term *reliability*?

Answer: Reliability is the probability that a component or product can perform as intended, over a period of time, under a given set of “normal” operating conditions.

1. Define the term *redundancy* and discuss the role it can play in improving product design

Answer: A duplication of components as a backup during failure. The more redundant systems there are, theoretically the safer the product is. Redundant parts and systems create more cost, so you need to optimize the balance between safety and costs.

1. How are reliability and availability related? And how are they different?

Answer: The availability is the percentage of the time that a system is operating properly, *when needed for use*. Reliability only considers the time that it takes to fail, while operating and not the time to make it available again after failure.

1. Discuss how reliability, maintainability, and availability are related by using an example of a product or service that you are familiar with.

Answer: Student examples will vary.