Multiple Choice Questions

Chapter 1: Defining Simulation: What, Why and When?

1. All simulations involve:

    a. The passage of time
    b. A model on a computer
    c. An imitation of a system
    d. A visual display

2. The simulations described in the book are used for:

    a. Understanding a system
    b. Understanding and improving a system
    c. Improving a system
    d. None of the above

3. Which of the following is not a simulation method?

    a. Monaco simulation
    b. System dynamics
    c. Agent-based
    d. Discrete-event

4. Hybrid simulation entails:

    a. Combining system dynamics with discrete-event simulation
    b. Combining a simulation with another modelling method
    c. Combining any two or more simulation methods
    d. Combining at least three different models

5. Which of the following is not true:

    a. Monte Carlo simulation focuses on risk and uncertainty in a system
    b. Discrete-event simulation focuses on stocks and flows
    c. System dynamics focuses on system structure and information feedback
    d. Agent-based simulation focuses on emergent behaviour from the interaction of individuals

6. The key reasons for using simulation are that systems are subject to:

    a. Variability, interconnectedness and complexity
    b. Variability, interconnectedness and simplicity
    c. Variability, information and complexity
    d. External shocks, interconnectedness and complexity

7. Customers arrive at a service system every 5 minutes and each customer passes through two service points. The service time at both service points is 4.5 minutes. Both the arrival rate and service rate are subject to variability. How long, on average, will it take customers to pass through the system?

   a. Less than 9 minutes
   b. 9 minutes
   c. More than 9 minutes
   d. Much more than 9 minutes

8. Which of the following is not a reason to use simulation?

   a. It requires a lot of data
   b. It is cheaper and quicker than experimenting with the real system
   c. It enables the conditions of an experiment to be controlled
   d. It fosters a creative approach to improving a system

9. Which of the following systems can be simulated?

   a. Transportation systems
   b. Manufacturing systems
   c. Health systems
   d. All of the above