Multiple Choice Questions

Chapter 9: Experimentation: Obtaining Accurate Results

1. The output from a model of a retail bank is most likely to be:

    a. Transient
    b. Steady-state
    c. Steady-state cycle
    d. None of the above

2. The output from a model of a factory that makes bricks is most likely to be:

    a. Transient
    b. Steady-state
    c. Steady-state cycle
    d. None of the above

3. The output from a model of an airport check-in area is most likely to be:

    a. Transient
    b. Steady-state
    c. Steady-state cycle
    d. None of the above

4. How can the initialisation bias in the output of a simulation be dealt with?

    a. Running the model for a warm-up period
    b. Performing multiple replications
    c. Calculating a confidence interval
    d. All of the above

5. When should a recommendation by the MSER heuristic for a warm-up period not be used?

    a. The value is zero
    b. The value is in the first half of the data
    c. The value is in the second half of the data
    d. None of the above

6. A key problem with setting initial conditions in a model is:

    a. Determining appropriate initial conditions
    b. Setting-up the conditions in the model
    c. Recording the time that initial entities spend in the model
    d. All of the above

7. The number of replications should be chosen to:

a. Provide a wide confidence interval
b. Give a high value for the standard deviation
c. Form a confidence interval of a desired precision
d. Give a whole number for the $\sqrt{n}$

8. What is the 95% confidence interval for the mean of the following values: 9.59, 7.50, 13.80, 5.75, 13.67, 7.56, 6.96, 14.44, 7.56, 9.77?

    a. 6.97, 10.34
    b. 7.37, 11.95
    c. 8.23, 12.32
    d. 11.01, 14.83

9. When using antithetic variates for variance reduction, how are the model runs treated?

    a. Individual runs are treated as individual replications
    b. Runs are paired (original and antithetic) and treated as an individual replication
    c. There is no need to run more than one original and one antithetic run of the model, since this gives the average performance
    d. None of the above

10. Why might a single long run be preferred to running multiple replications?

    a. The warm-up period only needs to be run once, reducing the time required to run experiments
    b. It ensures independence in the results
    c. Confidence intervals can be calculated more easily
    d. The estimated mean value is more accurate

11. What is the main problem with generating a confidence interval from a single long run of a simulation model?

    a. Obtaining enough data points
    b. Removing the initialisation bias
    c. Calculating the mean
    d. The data points are not independent of one another

12. Which of the following cannot be used to report the variability in the output from a model:

    a. Confidence interval of the mean
    b. A frequency diagram
    c. The standard deviation
    d. Minimum and maximum values