Chapter 1
Introduction to Quantitative Analysis

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

1) Interviews, statistical sampling, and company reports provide input data for quantitative analysis models.

2) Managers do not need to be familiar with the limitations, assumptions, and/or specific applicability of the quantitative analysis technique to use it for accurate decision making.

3) A model is a representation of a situation.

4) A parameter is a measurable quantity that may vary or is subject to change.

5) All problems can be solved by considering only the quantitative issues.

6) Testing the data and model should be done before the results have been analyzed.

7) Sensitivity analysis helps us estimate the effect of known and unknown errors in our model.

8) A sensitivity analysis allows a manager to answer the "what if" questions.

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

9) Operations Research is known as
   A) the science of better.
   B) the science of modeling.
   C) the science of numerical analysis.
   D) the science of sensitivity analysis.
   E) None of the above

10) A(n) _______ is a representation of reality or a real-life situation.
    A) objective
    B) analysis
    C) algorithm
    D) model
    E) None of the above

11) A measurable quantity that may vary, or is subject to change, and can be controlled is known as a(n)
    A) decision variable.
    B) solution.
    C) algorithm.
    D) parameter.
    E) None of the above

12) Which of the following is not one of the steps in the quantitative analysis approach?
    A) Implementing the Results
    B) Observing a hypothesis
    C) Developing a Solution
    D) Testing a Solution
    E) Defining the Problem
13) Expressing profits through the relationship among unit price, fixed costs, and variable costs is an example of
   A) a parameter specification model.
   B) a sensitivity analysis model.
   C) a quantitative analysis model.
   D) a postoptimality relationship.
   E) None of the above

14) Which of the following statement(s) are true regarding the advantages of mathematical modeling?
   A) Models can save time.
   B) Models may be the only way to solve some large and complex problems in a timely manner.
   C) Models accurately represent reality.
   D) Models can help decision makers formulate problems.
   E) All of the above

15) A measurable quantity that is inherent in the problem is called a(n)
   A) algorithm.
   B) uncontrollable variable.
   C) parameter.
   D) decision variable.
   E) enumeration variable.

16) Models that do not involve risk or chance are
   A) deterministic models.
   B) MIS models.
   C) postoptimality models.
   D) probabilistic models.
   E) None of the above

17) The break-even point is an example of a
   A) schematic model.
   B) postoptimality model.
   C) quantitative analysis model.
   D) sensitivity analysis model.
   E) None of the above

18) What is the formula for the break-even point of a simple profit model?
   A) Fixed Cost / (Variable Cost Per Unit — Selling Price Per Unit)
   B) Fixed Cost / Variable Cost Per Unit
   C) Fixed Cost / (Selling Price Per Unit — Variable Cost Per Unit)
   D) (Selling Price Per Unit — Variable Cost Per Unit) / Fixed Cost
   E) Selling Price Per Unit — (Fixed Cost / Variable Cost Per Unit)

19) A(n) ________ model is one that is accurate and correctly represents the problem or system under investigation.
   A) sensitive
   B) valid
   C) optimal
   D) robust
   E) feasible

ESSAY. Write your answer in the space provided or on a separate sheet of paper.

20) Quantitative analysis is ________.

21) Identify the steps of the quantitative analysis approach.

22) In making a decision, both ________ and quantitative factors must be considered.

23) Once we have a solution, we should then perform ________ analysis.

24) ________ models do not involve risk or chance.

25) ________ models are synonymous with stochastic models.