1. When using a graphical solution procedure, the region bounded by the set of constraints is called the
   a. solution.  
   b. feasible region.  
   c. infeasible region.  
   d. maximum profit region.  
   e. none of the above.  

2. In an LP problem, at least one corner point must be an optimal solution if an optimal solution exists.  
   a. True  
   b. False  

3. An LP problem has a bounded feasible region. If this problem has an equality constraint, then
   a. this must be a minimization problem.  
   b. the feasible region must consist of a line segment.  
   c. the problem must be degenerate.  
   d. the problem must have more than one optimal solution.  

4. Which of the following would cause a change in the feasible region?  
   a. increasing an objective function coefficient in a maximization problem  
   b. adding a redundant constraint  
   c. changing the right-hand side of a nonredundant constraint  
   d. increasing an objective function coefficient in a minimization problem  

5. If a nonredundant constraint is removed from an LP problem, then
   a. the feasible region will get larger.  
   b. the feasible region will get smaller.  
   c. the problem would become nonlinear.  
   d. the problem would become infeasible.  

6. In the optimal solution to a linear program, there are 20 units of slack for a constraint. From this we know that
   a. the dual price for this constraint is 20.  
   b. the dual price for this constraint is 0.  
   c. this constraint must be redundant.  
   d. the problem must be a maximization problem.  

7. A linear program has been solved and sensitivity analysis has been performed. The ranges for the objective function coefficients have been found. For the profit on the upper bound is 80, the lower bound is 60, and the current value is 75. Which of the following must be true if the profit on this variable is lowered to 70 and the optimal solution is found?  
   a. a new corner point will become optimal  
   b. the maximum possible total profit may increase  
   c. the values for all the decision variables will remain the same  
   d. all of the above are possible  

8. A graphical method should only be used to solve an LP problem when
   a. there are only two constraints.  
   b. there are more than two constraints.  
   c. there are only two variables.  
   d. there are more than two variables.
9. In LP, variables do not have to be integer valued and may take on any fractional value. This assumption is called
   a. proportionality.
   b. divisibility.
   c. additivity.
   d. certainty.

10. In solving a linear program, no feasible solution exists. To resolve this problem we might
    a. add another variable.
    b. add another constraint.
    c. remove or relax a constraint.
    d. try a different computer program.

11. If the feasible region gets larger due to a change in one of the constraints, the optimal value of the objective function
    a. must increase or remain the same for a maximization problem.
    b. must decrease or remain the same for a maximization problem.
    c. must increase or remain the same for a minimization problem.
    d. cannot change.

12. When alternate optimal solutions exist in an LP problem, then
    a. the objective function will be parallel to one of the constraints.
    b. one of the constraints will be redundant.
    c. two constraints will be parallel.
    d. the problem will also be unbounded.

13. If a linear program is unbounded, the problem probably has not been formulated correctly. Which of the following would most likely cause this?
    a. a constraint was inadvertently omitted
    b. an unnecessary constraint was added to the problem
    c. the objective function coefficients are too large
    d. the objective function coefficients are too small

14. A feasible solution to an LP problem
    a. must satisfy all of the problem’s constraints simultaneously.
    b. need not satisfy all of the constraints, only some of them.
    c. must be a corner point of the feasible region.
    d. must give the maximum possible profit.

15. Linear programming can be used to select effective media mixes, allocate fixed or limited budgets across media, and maximize audience exposure.
    a. True
    b. False

16. When applying LP to diet problems, the objective function is usually designed to
    a. maximize profits from blends of nutrients.
    b. maximize ingredient blends.
    c. minimize production losses.
    d. maximize the number of products to be produced.
    e. minimize the costs of nutrient blends.
17. The diet problem is
   a. also called the feed mix problem in agriculture.
   b. a special case of the ingredient mix problem.
   c. a special case of the blending problem.
   d. all of the above.

18. The selection of specific investments from among a wide variety of alternatives is the type of LP problem known as
   a. the product mix problem.
   b. the investment banker problem.
   c. the portfolio selection problem.
   d. the Wall Street problem.
   e. none of the above.