1. In photosynthesis, chlorophyll functions in changing
   (1) glucose molecules to starch
   (2) water and carbon dioxide to sugar
   (3) light energy to chemical bond energy
   (4) hydrogen bonds to water

2. Over a 24-hour period, which factor would have the least effect upon the rate of photosynthesis in a geranium plant?
   (1) concentration of carbon dioxide in the air
   (2) quantity of nitrates in the soil
   (3) wavelengths of light
   (4) availability of water in the soil

3. The basic inorganic materials used during photosynthesis are
   (1) \( H_2O \) AND \( C_6H_{12}O_6 \)
   (2) \( O_2 \) and \( CO_2 \)
   (3) \( H_2O \) and \( CO_2 \)
   (4) \( C_6H_{12}O_6 \) and \( CO_2 \)

4. In the photosynthetic reaction, which event normally occurs before the other three?
   (1) oxygen release
   (2) water absorption
   (3) PGAL synthesis
   (4) glucose formation

5. By which process are \( CO_2 \) and \( H_2O \) converted to carbohydrates?
   (1) transpiration
   (2) respiration
   (3) fermentation
   (4) photosynthesis

6. At optimum light intensity, which atmospheric gas most directly influences the rate of photosynthesis?
   (1) nitrogen
   (2) oxygen
   (3) carbon dioxide
   (4) hydrogen

7. PGAL is synthesized during
   (1) Anaerobic respiration
   (2) Aerobic respiration
   (3) Photochemical reactions of photosynthesis
   (4) Carbon-fixation reactions of photosynthesis

8. Most of the oxygen in the atmosphere results from the process of
   (1) fermentation
   (2) photosynthesis
   (3) regulation
   (4) respiration

9. Through the use of the isotope oxygen-18, scientists have demonstrated that the oxygen released during photosynthesis comes from
   (1) both carbon dioxide and water molecules
   (2) the splitting of water molecules
   (3) the breakdown of chlorophyll
   (4) PGAL in the dark reaction

10. Hydrogen atoms and carbon dioxide molecules participate in a series of chemical changes that produce a three-carbon sugar in photosynthesis. These chemical changes are part of
    (1) the photochemical reactions, only
    (2) the carbon-fixation reactions, only
    (3) both the photochemical and the carbon fixation reactions
    (4) neither the photochemical nor the carbon fixation reactions

11. Photosynthesis transforms molecules of water and carbon dioxide into molecules of
    (1) carbohydrate and oxygen
    (2) carbohydrate and nitrogen
    (3) polypeptide and oxygen
    (4) polypeptide and nitrogen

12. Green plants usually do not excrete large amounts of \( CO_2 \) because they use \( CO_2 \) in the process of
    (1) photosynthesis
    (2) hydrolysis
    (3) anaerobic respiration
    (4) transpiration

13. The basic raw materials for photosynthesis are
    (1) water and carbon dioxide
    (2) oxygen and water
    (3) sugar and carbon dioxide
    (4) water and oxygen

14. Which substances must a green plant obtain from its environment to carry on photosynthesis?
    (1) glucose and water
    (2) oxygen and chlorophyll
    (3) carbon dioxide and water
    (4) carbon dioxide and oxygen