

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<sub>2</sub>O AND C<sub>6</sub>H<sub>12</sub>O<sub>6</sub>      **(3) H<sub>2</sub>O and CO<sub>2</sub>**
  - (2) O<sub>2</sub> and CO<sub>2</sub>                      (4) C<sub>6</sub>H<sub>12</sub>O<sub>6</sub> and CO<sub>2</sub>
4. In the photosynthetic reaction, which event normally occurs before the other three?
  - (1) oxygen release                      (3) PGAL synthesis
  - (2) water absorption**                (4) glucose formation
5. By which process are CO<sub>2</sub> and H<sub>2</sub>O converted to carbohydrates?
  - (1) transpiration                      (3) fermentation
  - (2) respiration                         **(4) photosynthesis**
6. At optimum light intensity, which atmospheric gas most directly influences the rate of photosynthesis?
  - (1) nitrogen                              **(3) carbon dioxide**
  - (2) oxygen                                (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                      (3) regulation
  - (2) photosynthesis**                    (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<sub>2</sub> because they use CO<sub>2</sub> in the process of
  - (1) photosynthesis**                      (3) anaerobic respiration
  - (2) hydrolysis                            (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