

1. In a plant cell, the synthesis of sugar compounds from inorganic raw materials occurs in the

- (1) cell membrane
- (2) mitochondria
- (3) nucleus
- (4) chloroplasts

2. Which word equation represents the process of photosynthesis?

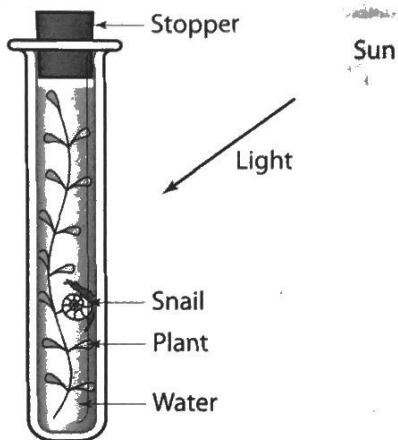
- (1) glucose \rightarrow alcohol + carbon dioxide
- (2) carbon dioxide + water \rightarrow glucose + oxygen
- (3) chlorophyll + water \rightarrow glucose + alcohol
- (4) glucose + oxygen \rightarrow carbon dioxide + water

5. Which compound is formed as a common product of the process of photosynthesis?

- (1) DNA
- (2) sugar
- (3) chlorophyll
- (4) carbon dioxide

6. In the test tube shown, what is produced by the snail that is used by the plant?

- (1) oxygen
- (2) carbon dioxide
- (3) food
- (4) egg cells



9. Energy for use in cells is stored in the form of

- (1) chemical bond energy
- (2) physical energy
- (3) heat energy
- (4) mechanical energy

10. In which process do organisms transfer the chemical bond energy in organic molecules to ATP molecules?

- (1) excretion
- (2) cellular respiration
- (3) autotrophic nutrition
- (4) photosynthesis

3. Which factor *least* influences the rate of photosynthesis?

- (1) atmospheric concentration of carbon dioxide
- (2) time of day
- (3) number of chloroplasts
- (4) concentration of nitrogen in the air

4. The basic raw materials of photosynthesis are

- (1) sugar and carbon dioxide
- (2) oxygen and water
- (3) water and carbon dioxide
- (4) oxygen and sugar

7. Which activity occurs during the process of photosynthesis?

- (1) Chemical energy from organic molecules is converted into light energy
- (2) Organic molecules are absorbed from the environment.
- (3) Organic molecules are converted into inorganic food molecules.
- (4) Light energy is stored as chemical energy in organic molecules.

8. Photosynthesis in plants requires chloroplasts and light energy.

- Identify two raw materials plants also use in this process [1]

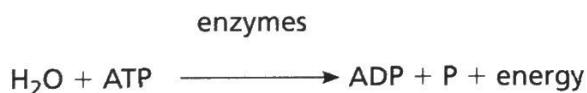
11. Energy released from the cellular respiration of glucose is

- (1) first stored within ATP
- (2) stored in the liver as fat
- (3) turned into fat
- (4) used directly for body activity

12. The process during which energy is released from digested foods is called

- (1) cellular respiration
- (2) chemical digestion
- (3) photosynthesis
- (4) excretion

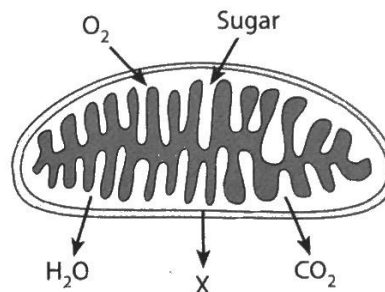
- 13.** As a direct result of the life process called cellular respiration in humans,
- (1) liquid wastes are eliminated from the body
 - (2) food is digested and absorbed into the blood
 - (3) energy is released from digested food within the cells
 - (4) nutrients are transported within the cells
- 14.** Which process involves the transfer of energy from carbohydrates to ATP molecules?
- (1) photosynthesis
 - (2) respiration
 - (3) digestion
 - (4) circulation
- 15.** During respiration, the energy within the bonds of a glucose molecule is released in small amounts in a step-by-step, enzyme-controlled reaction. In this process, the energy released is used to
- (1) synthesize ATP
 - (2) control the process of diffusion
 - (3) synthesize more glucose
 - (4) produce oxygen molecules
- 16.** Which statement best describes one of the events taking place in the chemical reaction represented below?



- (1) Energy is being stored as a result of cellular respiration.
 - (2) Energy is being released for metabolic processes.
 - (3) Decomposition is taking place, resulting in the synthesis of ATP.
 - (4) Photosynthesis is taking place, resulting in the storage of energy.
- 17.** Compare photosynthesis and respiration with regard to each of the following:
- source of energy [1]
 - materials used by each process [1]
 - location of each process in the cell [1]
 - when each process occurs in plants and animals [1]

- 18.** Which statement most accurately describes the process of respiration?
- (1) It occurs only in plants during the daylight hours and usually involves the exchange of gases.
 - (2) It occurs only in plants during the daylight hours and involves the taking in of preformed organic molecules.
 - (3) It occurs continuously in the cells of all organisms and involves the synthesis of carbohydrate molecules.
 - (4) It occurs continuously in the cells of all organisms and often involves an exchange of gases.
- 19.** During daylight hours green plants carry out photosynthesis. Do they also carry out respiration at this time? Support your answer. [1]

Base your answers to questions 20 through 22 on the diagram of a mitochondrion below and on your knowledge of biology.



- 20.** The process represented in this diagram is
- (1) respiration
 - (2) coordination
 - (3) photosynthesis
 - (4) immunity
- 21.** What term would most appropriately be represented by the "X"?
- (1) ATP
 - (2) chlorophyll
 - (3) antibodies
 - (4) glucose
- 22.** What is present within the mitochondrion that allows the reaction to occur?
- (1) enzymes
 - (2) chlorophyll
 - (3) bacteria
 - (4) carbon dioxide