Biology SOL Review - Energy - Photosynthesis and Respiration

1. (2006-47) In the human body, muscle cells have an increased need for energy during exercise. To help supply this energy, the body will immediately increase —
   a. food intake to increase the substances available for respiration
   b. activity in the nervous system to stimulate intake of carbon dioxide
   c. the need for waste products to be retained
   d. the breathing rate to supply more oxygen to cells for the release of energy

2. (2006-45) Which of the following is most effective in helping rain forest plants trap sunlight so that light energy can be converted to chemical energy?
   a. Large root size
   b. Small seed size
   c. Large leaf size
   d. Small stem

3. (2003-5) The process of photosynthesis ultimately converts light energy into —
   a. mechanical energy
   b. nuclear energy
   c. chemical energy
   d. electrical energy

4. (2002-49) Photosynthesis is important for almost all life on Earth because it —
   a. uses simple elements
   b. is responsible for most decay
   c. produces oxygen
   d. releases usable forms of nitrogen

5. (2005-21) Algae and multicellular plants are autotrophs because they —
   a. absorb nutrients from soil
   b. capture sunlight to produce sugars
   c. break down starches to glucose
   d. decompose dead organisms

6. (2006-41) The picture models a cellular metabolic process. The main purpose of this process is to produce —
   a. usable energy
   b. ADP
   c. phosphate groups
   d. H2O

7. (2001-26) The graph shows how dissolved O2 and CO2 levels changed in a pond over a 24-hour period. What caused the decrease in O2 concentration during the night?
   a. Increased evaporation
   b. Decreased photosynthesis
   c. Increased respiration
   d. Decreased temperatures
8. (2006-20) Scientists hypothesize that oxygen began to accumulate in Earth’s atmosphere after the appearance of living things with the ability to —
   a. breathe air
   b. photosynthesize
   c. reproduce sexually
   d. form tissues

9. (2001-33) The processes of photosynthesis and respiration can be thought of as a cycle because—
   a. one is used only by plants and the other is used only by animals
   b. both give off oxygen to be used by animals
   c. the products of one are used as the raw materials of the other
   d. they both have the same purpose

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11. (2002-23) Which of these processes is carried out in the same way in both plants and animals?
   a. Excretion of metabolic waste
   b. Circulation of body fluids
   c. Asexual reproduction
   d. Cellular respiration

12. (2005-9) The energy in the food produced by autotrophs or taken into the bodies of heterotrophs must be changed into a form that cells can use. The energy-transferring molecule used by cells is —
   a. CO2
   b. RNA
   c. ATP
   d. DNA

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### Comparison of Photosynthesis and Respiration

<table>
<thead>
<tr>
<th>Raw Materials</th>
<th>Photosynthesis</th>
<th>Respiration</th>
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<tbody>
<tr>
<td>Products</td>
<td>glucose and oxygen</td>
<td>water and CO₂</td>
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<tr>
<td>Purpose</td>
<td>store energy</td>
<td>release energy</td>
</tr>
</tbody>
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13. (2004-34) Which statement is supported by the diagram?
   a. Carbohydrates are converted into ATP by the mitochondrion.
   b. The mitochondrion uses the sun’s energy directly.
   c. The main source of energy for photosynthesis is carbohydrates.
   d. The end products of photosynthesis do not provide energy for cellular respiration.

14. (2005-49) Unlike plants, fungi cannot make their own food because they do not have —
   a. spores
   b. roots
   c. chlorophyll
   d. hyphae