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Test – Lesson 5 – Take in Energy - Part 1

1. The energy in an ATP molecule is stored in its phosphate bonds. That chemical energy came from _____.

(A) other high energy phosphate bonds
(B) the kinetic energy in Brownian movement
(C) heat energy
(D) high energy electrons

2. Heterotrophs capture carbon from _____.

(A) carbon dioxide in the air
(B) organic molecules
(C) inorganic carbon in the soil
(D) all 3 of the above sources

3. Which statement about chlorophyll is not true?

(A) Chlorophyll contains atoms of iron.
(B) Chlorophyll does not capture green light.
(C) Chlorophyll absorbs a photon of light and coughs up a high energy electron.
(D) Chlorophyll contains a porphyrin ring in which every other bond is a double bond.

4. Which statement about carotenoids is true?

(A) Carotenoids give leaves their green color.
(B) Carotenoid synthesis occurs inside chloroplasts.
(C) The carotenoid pigments synthesized in flamingos produce their reddish- orange coloring.
(D) Carotenoids, like chlorophyll, contain alternating double bonds.

5. Which statement about photosynthesis is not true?

(A) In the first stage of photosynthesis, two photons of light are used to make the high energy molecules ATP and NADPH.
(B) The second stage of photosynthesis, which consists of the capture of carbon dioxide from the air, also takes place within chloroplasts (but not within thylakoids) and requires a single photon of light.
(C) No photons of light are need for the second stage of photosynthesis.
(D) The chemical reactions that split carbon off of carbon dioxide and insert carbon into a 5 carbon carbohydrate to make a 6 carbon molecule of glucose is known as the Calvin cycle.

6. When chlorophyll ejects a high energy electron in response to a photon of absorbed light, that high energy photon is passed along the electron transport chain to make a molecule of ATP. How does chlorophyll replace the ejected electron?

(A) from a molecule of water
(B) from a molecule of ATP
(C) from a molecule of NADP
(D) from a molecule of oxygen

7. In photosynthesis, hydrogen ions accumulate within the thylakoids. To exit the thylakoids, hydrogen ions must pass through an enzyme in the thylakoid membrane called ATP synthase. For each hydrogen ion passing through, ATP synthase makes a molecule of _____.

(A) chlorophyll
(B) NADH
(C) ATP
(D) glucose

8. The second photon of light striking a thylakoid is used to make a molecule of high energy NADPH. NADPH is needed in photosynthesis because only a high energy molecule like NADPH has the energy to _____.

(A) pull electrons off hydrogen atoms to make hydrogen ions
(B) replace the high energy electron ejected from chlorophyll in the reaction center
(C) insert carbon into a 5 carbon molecule and make a 6 carbon molecule of glucose
(D) peel carbon atoms away from the 2 oxygen atoms in a molecule of carbon dioxide

9. The enzyme that attaches carbon dioxide to a 5 carbon carbohydrate molecule to make a 6 carbon glucose molecule is _____.

(A) glucose synthetase
(B) ribulose synthetase
(C) carbon dioxide transferase
(D) rubisco

10. The oxygen generated by photosynthesis _____.

(A) comes only from water molecules
(B) comes only from carbon dioxide molecules
(C) comes from both water molecules and carbon dioxide molecules
(D) comes from oxygen molecules in the air