Name _____ Class _____ Date _____

SECTION 6-1 REVIEW

THE LIGHT REACTIONS

VOCABULARY REVIEW Explain the relationship between the terms in each of the following pairs of terms.

1. granum, stroma _____

2. chlorophyll *a*, carotenoids _____

3. chemiosmosis, ATP synthase _____

MULTIPLE CHOICE Write the correct letter in the blank.

_____ 1. Chlorophyll *a*

- **a.** absorbs mostly orange-red and blue-violet light.
- **b.** absorbs mostly green light.
- **c.** is an accessory pigment.
- **d.** is responsible for the red color of many autumn leaves.

_____ 2. The photosystems and electron transport chains are located in the

- **a.** outer chloroplast membrane.
- **b.** inner chloroplast membrane.
- **c.** thylakoid membrane.
- **d.** stroma.

_____ 3. Both photosystem I and photosystem II

- **a.** receive electrons from other photosystems.
- **b.** donate electrons to a transport chain that generates NADPH.
- **c.** donate protons to each other.
- **d.** contain chlorophyll *a* molecules.

_____ 4. Water participates directly in the light reactions of photosynthesis by

- **a.** donating electrons to NADPH.
- **b.** donating electrons to photosystem II.
- **c.** accepting electrons from the electron transport chains.
- **d.** accepting electrons from ADP.

_____ 5. The energy that is used to establish the proton gradient across the thylakoid membrane comes from the

- **a.** synthesis of ATP.
- **b.** synthesis of NADPH.
- **c.** passage of electrons along the electron transport chain of photosystem II.
- **d.** splitting of water.

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SHORT ANSWER Answer the questions in the space provided.

1. Why is photosynthesis referred to as a biochemical pathway? _____

2. How does the structure of a chloroplast enable it to build up a concentration gradient of protons?

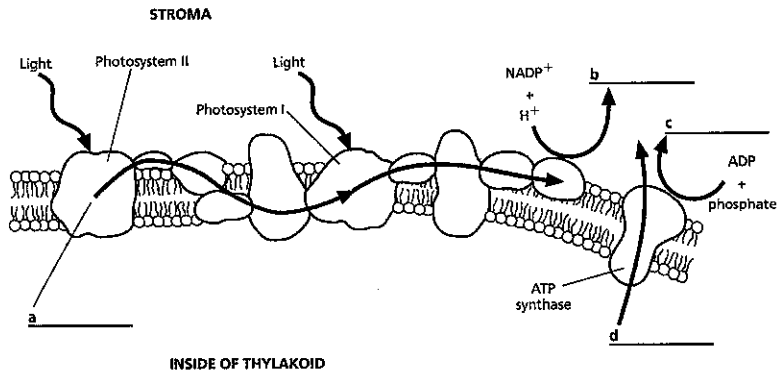
3. What are the energy-carrying end products of the light harvesting reactions? _____

4. Explain the function of accessory pigments. _____

5. **Critical Thinking** Which photosystem—I or II—most likely evolved first? Explain your reasoning.

STRUCTURES AND FUNCTIONS Label the substances represented by the letters *a–d* below.

The diagram below summarizes the light reactions of photosynthesis.



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CHAPTER 6 ACTIVE READING WORKSHEETS

PHOTOSYNTHESIS

Section 6-1: The Light Reactions

Read the passage below, which covers topics from your textbook. Answer the questions that follow.

[1] Located in the membrane of the thylakoids are a variety of pigments, the most important of which are called **chlorophylls.** [2] There are several different types of chlorophylls. [3] The two most common types are known as chlorophyll *a* and chlorophyll *b*.

[4] A slight difference in molecular structure between chlorophyll *a* and chlorophyll *b* causes the two molecules to absorb different colors of light. [5] Chlorophyll *a* absorbs less blue light but more red light than chlorophyll *b* absorbs. [6] Neither chlorophyll *a* nor chlorophyll *b* absorbs much green light. [7] Instead, they allow green light to be reflected or transmitted. [8] That is why leaves and other plant structures that contain large amounts of chlorophyll look green. [9] Only chlorophyll *a* is directly involved in the light reactions of photosynthesis. [10] Chlorophyll *b* assists chlorophyll *a* in capturing light energy; therefore, chlorophyll *b* is called an accessory pigment.

Read each question and write your answer in the space provided.

SKILL: Identifying Main Ideas

1. Which sentence identifies the main idea of the first paragraph?

_____

2. What supporting details are described by the remaining sentences in the first paragraph?

_____

_____

Read the questions and write your answers in the spaces provided.

SKILL: Recognizing Similarities and Differences

One reading skill is the ability to recognize similarities and differences between two phrases, ideas, or things. This skill is sometimes known as comparing and contrasting. Some clue words that writers use when pointing out similarities or making comparisons are *like, as, similarly, similar to, neither, nor,* and *in the same way.* Some clue words that writers use when pointing out differences or making contrasts include *however, but, although, on the contrary, still, either, or,* and *on the other hand.* *continued on the next page . . .*

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3. What difference between chlorophyll *a* and chlorophyll *b* is noted in Sentence 4?

_____

_____

_____

4. Does Sentence 5 note a similarity or a difference between these molecules?

_____

5. What is the similarity or difference noted in Sentence 5?

_____

_____

6. Does Sentence 6 note a similarity or a difference?

_____

7. What is the similarity or difference noted in Sentence 6?

_____

_____

Read the question and write your answer in the space provided.

SKILL: Recognizing Cause-and-Effect Relationships

In a cause-and-effect relationship, one event, or cause, triggers a second event, or effect, to occur. Determine the cause or effect in the question below.

8. What is the effect of the difference between chlorophyll *a* and chlorophyll *b*?

_____

_____

Circle the letter of the phrase that best completes the statement.

9. Because chlorophyll *b* assists chlorophyll *a* in capturing light energy, chlorophyll *b*

   a. is a carotenoid.
   b. is called an accessory pigment.
   c. absorbs more blue light than chlorophyll *a*.
   d. reflects green light.

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