Name _____ **Period** _____

Ms. Foglia **Date** _____

AP: CHAPTER 10: PHOTOSYNTHESIS

1. What role do autotrophs fill in the biosphere?

   _____

2. Indicate the role of each structure within the leaf:

   a. stomates _____

   b. mesophyll cells _____

   c. thylakoid membranes _____

   d. stroma _____

3. What is the source of oxygen released from photosynthesis?

   _____

4. In the overview of photosynthesis, indicate the most significant function of:

   a. Light reaction _____

   b. Calvin cycle _____

5. Light is a form of energy known as _____

   and visible light has a wavelength range of _____.

6. Plant light receptors absorb _____ wavelengths

   of light and reflect _____wavelengths of light.

7. The porphyrin ring of chlorophyll contains the element _____

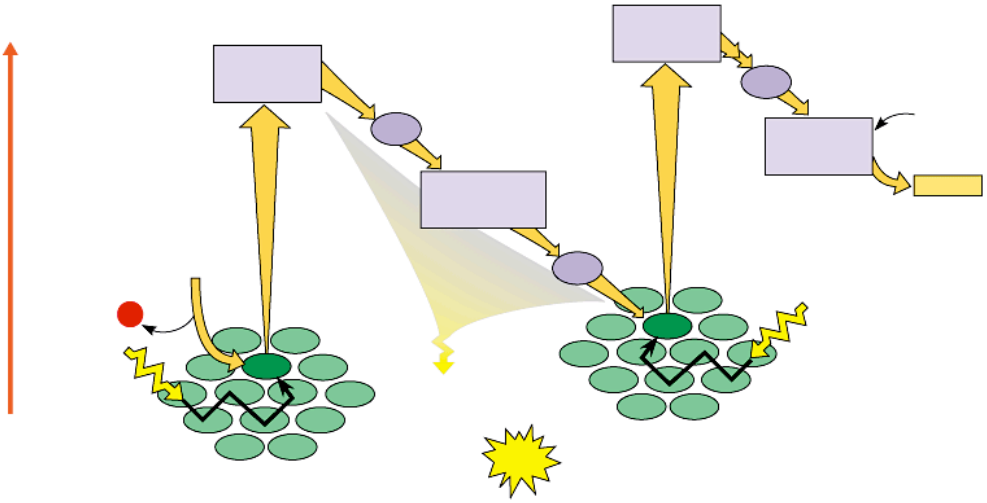
   and the role of the ring is to _____

   _____

8. What does chlorophyll do when excited by photons? _____

_____

9. Label the diagram and explain the difference between Photosystem I and Photosystem II.

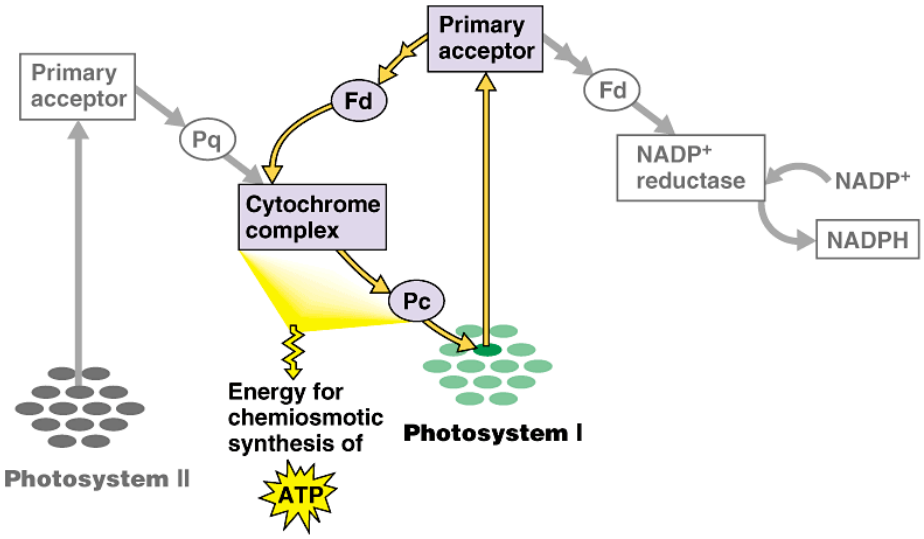


_____

_____

_____

10. With 2 different colored pencils, follow the energy paths of both noncyclic and cyclic electron flow in the diagram.



11. How does cyclic differ from noncyclic photophosphorylation?

_____

_____

12. To generate ATP, chloroplasts rely on the ETC to _____

and ATP is synthesized when: _____

_____

13. Within the thylakoid membrane and stroma, indicate what happens to each of the following:

a. water _____

b. high energy electrons _____

c. H+ _____

d. oxygen _____

e. NADP+ _____

f. ADP _____

14. Where in the chloroplast is the H+ concentration highest? _____

_____

15. What happens during carbon fixation? _____

_____

_____

16. List the materials the plant uses during the Calvin cycle and the source of the materials.

_____

_____

17. The products of the Calvin cycle are _____

_____

18. What environmental and internal challenges have forced both C4 and CAM plants to evolve alternatives to the photosynthesis system used by other plants?

_____

_____

19. Why do high oxygen levels inhibit photosynthesis? _____

_____

20. What happens during photorespiration and why is it considered bad for plants?

_____

_____

21. What evolutionary adaptations to the Calvin cycle are seen in C4 plants like sugar cane?

_____

_____

_____

22. Draw a diagram to show the anatomical adaptations seen in C4 plants to accommodate their variation on the Calvin cycle.

23. What evolutionary adaptation to the Calvin cycle is seen in CAM plants like cacti?

_____

_____