Unit 4-Review for EOC- Photosynthesis and Cellular Respiration
Pages 112-145
Name: Answer Key Date: Hour:

1. Most but not all autotrophs use photosynthesis. What is photosynthesis? series of chemical reactions during which plants convert light energy to chemical energy stored in the bonds of glucose
2. Write the chemical equation for photosynthesis.
$6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$
3. Photosynthesis can be broken down into what two main processes? Light Reactions and Calvin Cycle
4. Define the following:
   a. Pigments: a substance that gives another substance or a mixture its color
   b. Chlorophyll a: green pigment found in all cells that carry out photosynthesis
   c. Chlorophyll b: red, orange, yellow, brown accessory pigments that assist in capturing light energy
   d. Accessory pigment: a pigment that absorbs light energy and transfers it to chlorophyll in photosynthesis
5. Where does the light reaction take place? Thylakoid inside chloroplasts
6. What are the clusters pigments in the Thylakoid membrane called? chlorophyll
7. What connects the two photosystems? Electron Transport chain
8. Which photosystem occurs first? Photosystem II
9. What are the products of the light-dependent portion of photosynthesis that are necessary for the next step in photosynthesis? ADP → ATP and $NADP^+ \rightarrow NADPH$
10. What product of the light reaction is lost to the atmosphere and not used in the next step? Oxygen
11. The light-independent part of photosynthesis is otherwise known as what? Calvin Cycle
12. What is the name of the next step of photosynthesis? Calvin Cycle
13. Where does it take place? Stroma (fluid surrounds thylakoid)
14. What must be taken in from the atmosphere during this part of photosynthesis? CO_2
15. What are the products of the Calvin Cycle? $C_6H_{12}O_6$ (glucose)
16. What is chemiosmosis? movement of protons down their concentration gradient across a membrane that is coupled to synthesis of ATP
17. How does the enzyme ATP synthase help make ATP? creates ATP by adding a phosphate to ADP
18. Where are stomata located and what are their functions? many openings in a leaf that enable gas exchange
19. What is the process that is responsible for breaking down food molecules to release stored energy? cellular Respiration
20. What are the 2 products of glycolysis? Pyruvic Acid, 2 ATP
21. How many net ATP are generated during glycolysis? 2
22. What happens when you break down organic compounds in the absence of oxygen? Fermentation
23. What are the 3 major steps in cellular respiration? Glycolysis → Krebs cycle → Electron Transport chain
24. What are the 2 main differences between glycolysis and cellular respiration? (think about which needs oxygen and the location of each process) Glycolysis does not require O_2 and occurs in the cytoplasm
25. What 4 things are formed during Krebs Cycle? CO_2, 2 ATP, NADH, $FADH_2$
26. What is the end product of the very last major step of cellular respiration? 34 ATP
27. Name the major step of cellular respiration in which the most energy is made? ETC
28. What is the total net gain of ATP at the end of cellular respiration from one molecule of glucose?
38 ATP = 2 (glycolysis) + 2 (Krebs Cycle) + 34 (ETC)
29. Electrons are donated to the electron transport chain by what 2 ion carrier in cellular respiration?
NADH and $FADH_2$
30. What organelle does cellular respiration happen in? Mitochondria
31. Which step of cellular respiration is citric acid formed? Krebs Cycle

Pyruvic Acid → Citric Acid
↓
CO_2 is released

Cellular Respiration Equation:

$C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O + 38\ ATP$