

Photosynthesis Test Review

Ch. 8

Objective Questions:

1. Be able to identify parts and functions of a cross section of a leaf
 - a. **Stroma, granum, thylakoid, thylakoid space, thylakoid, mesophyll layer, mesophyll cell, chloroplast**
2. Be able to label the parts of photosynthesis within a chloroplast
 - a. **Basic understanding of screaming angel**
3. Be able to read graphs and charts to deduce answers
4. Explain Priestley's experiment
 - a. **Plants generated O₂**
5. Give examples of autotrophs
 - a. **Plants, Algae, and some bacteria**
6. Give examples of heterotrophs
 - a. **Animals, fungi, some protists**
7. How does light behave?
 - a. **Particles known as photons**
8. How is ATP formed?
 - a. **Enzyme ATPase, bonds Pi to ADP**
9. **KNOW THE EQUATION FOR PHOTOSYNTHESIS!!!!**
10. Know the flow of electrons during photosynthesis
 - a. **Light energy converts CO₂ and H₂O into high energy sugars such as starch and glucose**
11. What are autotrophs?
 - a. **Organisms that generated their own energy, anabolic reaction**
12. What are heterotrophs?
 - a. **Organisms that consume energy source, catabolic**
13. What are pigments?
 - a. **Light absorbing molecules**
14. What are some examples of producers?
 - a. **See question 5**
15. What are stomata?
 - a. **Opening on the underside of a leaf where gases are exchanged with the atmosphere and water is also lost**
16. What are the parts of an ATP molecule? An ADP molecule?
 - a. **Adenosine, ribose, and 3 or 2 phosphates**
17. What are the products and reactants of light-dependent reactions?
 - a. **Reactants-H₂O products-O₂, ATP, and NADPH**
18. What are the products and reactants of the Calvin Cycle?
 - a. **Reactants-CO₂ products-C₆H₁₂O₆**
19. What are the steps of Light Dependent Reactions?
 - a. **High-energy electrons move through the electron transport chain.**
 - b. **Pigments in photosystem II absorb light.**
 - c. **ATP synthase allows H⁺ ions to pass through the thylakoid membrane.**
 - i. **NOT! ATP and NADPH are used to produce high-energy sugars.**
20. What causes energy to be released from ATP?
 - a. **Breaking of bond between second and third phosphate**

21. What did Ingenhousz conclude?
 - a. Plants require light to generate oxygen
22. What did Jan van Helmont conclude?
 - a. The increase of plant mass is b/c from water
23. What do Golgi bodies do?
 - a. Receive, modify/repackage, and distribute
24. What happens inside the thylakoid membrane?
 - a. Light reaction (Photosystems I and II)
25. What is a granum?
26. What is a porphyrin ring?
27. What is a synonym for the Calvin Cycle?
 - a. C3, Carbon fixation, light independent, dark reaction
28. What is osmosis?
29. What is the first step of photosynthesis?
30. What is the function of lysosomes?
31. What would affect the rate of photosynthesis? How?
 - a. Light intensity (photosystems), temperature (enzyme activity), CO₂ (carbon fixation), water (electron supply)
32. Where are photosystems I and II found?
 - a. Thylakoid membrane
33. Where do light-dependent reactions take place?
 - a. Thylakoid membrane and thylakoid space
34. Where does the Calvin Cycle take place?
 - a. Stroma
35. Where is chlorophyll found?
 - a. Thylakoid membrane Mg is at the center
36. Where is the stroma located?
 - a. Outside the stacks of thylakoid
37. Why are most plants green?
 - a. Chlorophyll reflects the wavelengths of the green

Unit 3: Respiration Test Review

Ch. 9

Objective Questions:

Be familiar with the following topics (know lots of details!)

1. Acetyl CoA
 - a. 2 carbon molecule produced in the TRANSITION stage (Pyruvate is transported into Mitochondria)
 - b. Acetyl CoA enters the Krebs' Cycle
2. Aerobic respiration
 - a. Requires oxygen
3. Anaerobic respiration
 - a. Does not require oxygen

4. Chemiosmosis
 - a. ATP synthase allows H⁺ (protons) to flow across inner mitochondrial membrane down concentration gradient, which produces ATP.
5. Electron accepting molecules
 - a. NAD⁺ and FADH⁺
6. Electron carrying molecules
 - a. NADH and FADH₂
7. Glucose
 - a. Required for glycolysis, broken down to generate ATP through the process of cellular respiration
8. How are the photosynthesis and respiration equations related?
 - a. The products of Photosynthesis and the reactants for Respiration
9. How much ATP is produced in each step of respiration?
 - a. Glycolysis (in cytoplasm)= 2
 - b. Krebs (in Mitochondria) =2
 - c. ETC (in Mitochondria) =34
10. How much NADH is produced in each step of respiration?
 - a. Glycolysis=2
 - b. Transition Stage =2
 - c. Krebs Cycle =6
11. Know where each step of respiration takes place in the cell
 - a. Study Mitochondria diagram
12. Pyruvic Acid/Pyruvate
 - a. A three carbon molecule produced when glucose is split in Glycolysis
13. Sequence of events in cellular respiration
 - a. Study Mitochondria diagram
14. Sequence of events in electron transport
 - a. Study Mitochondria diagram
15. Sequence of events in glycolysis
 - a. Study Mitochondria diagram
16. Sequence of events in Kreb's cycle
 - a. Study Mitochondria diagram
17. The reactants and products of Alcoholic Fermentation
 - a. Reactants-Glucose
 - b. Products-(2)ATP, (2)CO₂ and (2)Ethanol
18. The reactants and products of Cellular Respiration (the overall equation)
$$\begin{array}{ccccccc} \text{C}_6\text{H}_{12}\text{O}_6 & + & 6\text{O}_2 & \text{--->} & 6\text{CO}_2 & + & 6\text{H}_2\text{O} + \text{ENERGY(ATP)} \\ \text{Glucose} & & \text{Oxyge} & & \text{Carbon dioxide} & & \text{Water} \end{array}$$
19. The reactants and products of Electron Transport
 - a. Reactants-NADH, FADH₂, and O₂
 - b. Products- 34ATP and H₂O
20. The reactants and products of glycolysis
 - a. Reactants-Glucose
 - b. Products- (2)Pyruvate, (2)NADH and (2)ATP
21. The reactants and products of Kreb's cycle
 - a. Products-(34)ATP, H₂O
22. The reactants and products of Lactic Acid Fermentation
 - a. Reactants-Glucose

- b. **Products- (2)Lactic Acids**
- 23. What is the net gain of ATP in each step of respiration?
 - a. **See question 9**
- 24. What is the net gain of NADH in each step of respiration?
 - a. **See Question 10**
- 25. What type of cells undergo Alcoholic fermentation?
 - a. **Yeast cells**
- 26. What type of cells undergo Lactic Acid fermentation?
 - a. **Muscle cells**
- 27. Where would anaerobic bacteria be found?
 - a. **Deep in mud, guts of animals, environments devoid of O₂**