Photosynthesis Essentials

Biology · Answer Key · 15 Questions

1. What is the primary purpose of photosynthesis in plants?

A) To convert light energy into chemical energy
B) To absorb water from the soil
C) To break down glucose into ATP
D) To produce carbon dioxide

2. In which plant cell organelle does photosynthesis occur?

A) Mitochondria
B) Chloroplast
C) Nucleus
D) Vacuole

3. Which pigment is primarily responsible for capturing light energy in plants?

A) Carotenoid
B) Chlorophyll
C) Anthocyanin
D) Hemoglobin

4. What are the main reactants required for photosynthesis to occur?

A) Glucose and oxygen
B) Carbon dioxide and water
C) Nitrogen and oxygen
D) Carbon dioxide and ATP

5. What are the two main products resulting from photosynthesis?

A) Glucose and oxygen
B) Carbon dioxide and water
C) ATP and carbon dioxide
D) Starch and nitrogen

6. Where do the light-dependent reactions take place within the chloroplast?

A) Stroma
B) Thylakoid membrane
C) Outer membrane
D) Cell wall

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7. What is another common name for the light-independent reactions of photosynthesis?

A) Krebs cycle
B) Calvin cycle
C) Glycolysis
D) Fermentation

8. Where does the Calvin cycle take place within the chloroplast?

A) Thylakoid lumen
B) Stroma
C) Intermembrane space
D) Ribosome

9. What gas enters the leaf through microscopic pores called stomata?

A) Oxygen
B) Nitrogen
C) Carbon dioxide
D) Hydrogen

10. What process splits water molecules using light energy during the light reactions?

A) Photolysis
B) Hydrolysis
C) Plasmolysis
D) Glycolysis

11. What is the chemical formula for glucose?

A) $C_6H_{12}O_6$
B) CO_2
C) H_2O
D) $C_{12}H_{22}O_{11}$

12. Which energy-carrying molecule produced in light reactions powers the Calvin cycle?

A) ATP
B) DNA
C) RNA
D) Glucose

13. Which enzyme is responsible for carbon fixation in the Calvin cycle?

A) ATP Synthase
B) RuBisCO
C) Amylase
D) Helicase

14. What byproduct of photosynthesis is released into the atmosphere?

A) Carbon dioxide
B) Oxygen
C) Nitrogen
D) Methane

15. Which photosynthetic pathway is commonly adapted by desert plants like cacti to reduce water loss?

A) C3 pathway
B) CAM pathway
C) C4 pathway
D) Lactic acid pathway

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