

CHAPTER – 10
Photosynthesis in Higher Plants

1. The primary pigment involved in photosynthesis is:
 - a) Carotene
 - b) Xanthophyll
 - c) Chlorophyll
 - Anthocyanin

2. Photosynthesis primarily occurs in which part of the plant?
 - a) Roots
 - b) Stems
 - c) Leaves
 - d) Flowers

3. Which of the following is the primary product of the light-dependent reactions of photosynthesis?
 - a) Glucose
 - b) Oxygen
 - c) Carbon dioxide
 - d) Water

4. The light-independent reactions of photosynthesis are also known as:
 - a) Calvin cycle
 - b) Krebs cycle
 - c) Glycolysis
 - d) Fermentation

5. Where does the light-dependent reaction of photosynthesis occur?
 - a) Cytoplasm
 - b) Stroma
 - c) Thylakoid membranes
 - d) Mitochondria

6. Which molecule acts as the primary energy carrier in photosynthesis?
- a) ATP
 - b) NADPH
 - c) Glucose
 - d) Ribulose biphosphate
7. Which of the following is NOT a product of the light-dependent reactions?
- a) ATP
 - b) NADPH
 - c) Oxygen
 - d) Glucose
8. The enzyme RuBisCO is involved in which stage of photosynthesis?
- a) Light-dependent reactions
 - b) Light-independent reactions
 - c) Calvin cycle
 - d) Electron transport chain
9. Which gas is required for the Calvin cycle to occur?
- a) Oxygen
 - b) Nitrogen
 - c) Carbon dioxide
 - d) Hydrogen
10. In photosynthesis, the process of splitting water molecules occurs in:
- a) Stroma
 - b) Thylakoid membranes
 - c) Cytoplasm
 - d) Mitochondria
11. The pigment responsible for absorbing light energy in photosynthesis is located in:

- a) Chloroplasts
- b) Mitochondria
- c) Nucleus
- d) Ribosomes

12. Which of the following is the end product of the Calvin cycle?

- a) Oxygen
- b) ATP
- c) Glucose
- d) NADPH

13. The primary function of chlorophyll in photosynthesis is to:

- a) Transport glucose
- b) Absorb light energy
- c) Split water molecules
- d) Fix carbon dioxide

14. Which part of the chloroplast contains the enzymes necessary for the Calvin cycle?

- a) Thylakoid membranes
- b) Stroma
- c) Granum
- d) Outer membrane

15. The light-independent reactions of photosynthesis use which molecule as a reducing agent?

- a) NADH
- b) NADPH
- c) FADH₂
- d) ATP

16. What is the role of water in photosynthesis?

- a) Provide carbon dioxide

- b) Provide electrons and protons
- c) Provide glucose
- d) Absorb light energy

17. In which part of the chloroplast does the light-dependent reaction occur?

- a) Stroma
- b) Thylakoid lumen
- c) Outer membrane
- d) Inner membrane

18. Which of the following is NOT involved in the light-dependent reactions?

- a) Photosystem I
- b) Photosystem II
- c) Calvin cycle
- d) Electron transport chain

19. What is the primary source of energy for the light-dependent reactions?

- a) Glucose
- b) NADPH
- c) Light energy
- d) ATP

20. The Calvin cycle converts carbon dioxide into:

- a) ATP
- b) Glucose
- c) Oxygen
- d) NADPH

21. Which molecule is used to transport energy from the light-dependent reactions to the Calvin cycle?

- a) ATP

- b) NADPH
- c) FADH₂
- d) ADP

22. The oxygen produced during photosynthesis comes from:

- a) Carbon dioxide
- b) Water
- c) Glucose
- d) ATP

23. Which part of the chloroplast contains the photosystems?

- a) Stroma
- b) Thylakoid membranes
- c) Outer membrane
- d) Matrix

24. The process by which light energy is converted into chemical energy is known as:

- a) Respiration
- b) Photosynthesis
- c) Fermentation
- d) Glycolysis

25. Which of the following pigments is involved in the absorption of light energy?

- a) Carotenoids
- b) Xanthophyll
- c) Chlorophyll a
- d) Chlorophyll b

26. The Calvin cycle fixes carbon dioxide into:

- a) ATP
- b) Ribulose biphosphate
- c) Glucose

d) Oxygen

27. In which part of the chloroplast does the Calvin cycle take place?

a) Thylakoid membranes

b) Stroma

c) Inner membrane

d) Outer membrane

28. Which molecule is the final electron acceptor in the light-dependent reactions?

a) Oxygen

b) NADP⁺

c) ATP

d) Water

29. The primary function of the light-dependent reactions is to:

a) Produce glucose

b) Generate ATP and NADPH

c) Fix carbon dioxide

d) Produce oxygen

30. Which of the following processes occurs in the thylakoid membranes?

a) Calvin cycle

b) Light-dependent reactions

c) Glycolysis

d) Krebs cycle

31. Which substance is synthesized during the light-dependent reactions and used in the Calvin cycle?

a) Glucose

b) NADPH

c) Oxygen

d) ATP

32. Which enzyme is responsible for fixing carbondioxide in the Calvin cycle?

a) ATP synthase

b) RuBisCO

c) Photosystem II

d) NADP+ reductase

33. What is the role of NADPH in photosynthesis?

a) Provide energy

b) Donate electrons

c) Absorb light

d) Fix carbon dioxide

34. The Calvin cycle is also known as:

a) Citric acid cycle

b) Light reaction

c) Dark reaction

d) Photorespiration

35. Which of the following is a product of the Calvencycle?

a) Oxygen

b) ATP

c) NADPH

d) Glucose

36. The process of photosynthesis can be summarized by the equation:

a) $\text{CO}_2 + \text{H}_2\text{O} + \text{light energy} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + \text{O}_2$

b) $\text{C}_6\text{H}_{12}\text{O}_6 + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O} + \text{light energy}$

c) $\text{CO}_2 + \text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6$

d) $\text{C}_6\text{H}_{12}\text{O}_6 + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$

37. Which structure in the chloroplast is responsible for the light-dependent reactions?

- a) Stroma
- b) Thylakoid membranes
- c) Granum
- d) Matrix

38. What is the source of electrons for the light-dependent reactions?

- a) NADPH
- b) Glucose
- c) Water
- d) Carbon dioxide

39. Which component of the chloroplast is involved in the fixation of carbon dioxide?

- a) Thylakoid membrane
- b) Stroma
- c) Outer membrane
- d) Granum

40. The Calvin cycle occurs in the:

- a) Thylakoid membrane
- b) Stroma
- c) Cytoplasm
- d) Mitochondria

41. The absorption of light energy by chlorophyll leads to:

- a) Production of glucose
- b) Excitation of electrons
- c) Formation of oxygen
- d) Fixation of carbon dioxide

42. Which type of photosynthesis occurs in plants under low light conditions?

- a) C₃ photosynthesis

- b) C4 photosynthesis
- c) CAM photosynthesis
- d) Both B and C

43. Which of the following is NOT a phase of photosynthesis?

- a) Light-dependent reactions
- b) Calvin cycle
- c) Krebs cycle
- d) Glycolysis

44. The light energy absorbed by chlorophyll is used to:

- a) Fix carbon dioxide
- b) Generate ATP
- c) Produce glucose
- d) Split water molecules

45. Which of the following is the primary function of the Calvin cycle?

- a) Convert light energy into chemical energy
- b) Produce ATP and NADPH
- c) Fix carbon dioxide into organic compounds
- d) Generate oxygen

46. Which process is used by plants to store excess glucose?

- a) Cellular respiration
- b) Photosynthesis
- c) Glycogenolysis
- d) Starch formation

47. Which of the following is NOT a role of photosynthesis in plants?

- a) Oxygen production
- b) Carbon fixation

- c) Energy storage
- d) Respiration

48. The molecule responsible for capturing light energy in the chloroplast is:

- a) Carotenoids
- b) Chlorophyll
- c) Phycobilins
- d) Xanthophyll

49. Which process is directly driven by light energy in photosynthesis?

- a) ATP synthesis
- b) Carbon fixation
- c) Oxygen release
- d) Glucose production

50. What happens to the oxygen produced during the light-dependent reactions?

- a) It is used in the Calvin cycle
- b) It is released into the atmosphere
- c) It is converted into glucose
- d) It is absorbed by the chloroplast

Answer Key for Chapter 10 (Photosynthesis in Higher Plants)

1	2	3	4	5
C	C	B	A	C
6	7	8	9	10
A	D	B	C	B
11	12	13	14	15
A	C	B	B	B
16	17	18	19	20
B	B	C	C	B
21	22	23	24	25
A	B	B	B	C
26	27	28	29	30
C	B	B	B	B
31	32	33	34	35
B	B	B	C	D
36	37	38	39	40
A	B	C	B	B
41	42	43	44	45
B	D	C	D	C
46	47	48	49	50
D	D	B	A	B