



INDIAN SCHOOL AL WADI AL KABIR

Class: XI	Department: SCIENCE 2020 -21 SUBJECT : BIOLOGY	Date of submission: iii week of Feb. 2021
Worksheet: 14 with answers	CHAPTER: PHOTOSYNTHESIS IN HIGHER PLANTS & PLANT GROWTH REGULATORS	Note: A4 FILE FORMAT
NAME OF THE STUDENT	CLASS & SEC:	ROLL NO.

1 MARK QUESTIONS

1. Where are the photosynthetic pigments located in plants?
2. What you mean by LHC?
3. Write the importance of light reaction in photosynthesis.
4. How does Krantz anatomy favour C_4 plants?

2 MARKS QUESTIONS

5. What are the differences between the primary CO_2 acceptors in C_3 & C_4 pathways?
6. Give a brief description of different factors affecting photosynthesis.
7. Which PGR is known as stress hormone? What are the different roles of this hormone in plants?
8. What is ethephon? What is its importance in agriculture?
9. Plants like *Sorghum* are photosynthetically more efficient than plants like Rice. Give reasons.

3 MARKS QUESTIONS

10. Write the differences between cyclic and non-cyclic photophosphorylation.
11. Schematically represent the 'Z' scheme of ETS in light reaction.
12. Schematically represent the Calvin cycle.

13. Where does cyclic photophosphorylation occur? Describe the process. Why is the process referred to as cyclic?
14. Write a brief note on photorespiration.
15. Give the differences between C₃ and C₄ plants.
16. Give a detailed description of the functions of the following growth regulators:
 (i) Auxin (ii) Cytokinin (iii) Gibberellins

5 MARKS QUESTIONS

17. Describe C₄ pathway and represent it schematically.
18. Write notes on
 - a) Kranz anatomy
 - b) Reaction center
 - c) Photolysis
 - d) Law of limiting factors
 - e) Absorption spectrum
19. With the help of a neat labeled diagram explain the chemi-osmotic hypothesis in photosynthesis.

HINTS/SOLUTION

SECTION A		
1	Thylakoid membrane	1
2	Light Harvesting Complex	1
3	Produces assimilatory power – ATP and NADPH	1
4	Necessary for C ₄ pathway and thus avoids photorespiration	1
SECTION B		
5	C ₃ – 5carbon compound, RuBP C ₄ – 3 carbon compound, PEP	2
6	Light, CO ₂ , temperature, water	2
7	ABA, withstand stress, promotes dormancy	2
8	Ethylene, promotes fruit ripening	2
9	Sorghum is C ₄ plant and Rice is C ₃ plant. The first one is more efficient due to the absence of photorespiration	2
SECTION C		
10	Cyclic- electron travels in a cyclic way, only PS I, ATP synthesis, stroma lamellae, not common	3

	Non – cyclic- Z scheme, both PS I and PS II, ATP and NADPH, grana thylakoid, common (any three)	
11	Schematic representation	3
12	Schematic representation	
13	Stroma lamellae, explanation and representation	3
14	Photorespiration – due to oxygenase activity of Rubisco, synthesis of PGA and phosphoglycolate, wasteful process, release of CO ₂	3
15	C ₃ plants and C ₄ plants – differences in primary carbon dioxide acceptor, kranz anatomy, temperature tolerance, photorespiration etc.	3
16	Functions of PGRs	3
	SECTION D	
17	Schematic representation	5
18	(a) Special leaf anatomy in C ₄ plants, around vascular bundles (b) Single Chl a molecule that forms the centre of pigment system (c) Splitting of water associated with ‘Z’ scheme (d) Law of limiting factors (e) Graphical representation of absorption of light by pigments	5
19	Diagram and explanation of chemi osmotic hypothesis	5

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