



BIOLOGY

BOOKS - VIKRAM PUBLICATION (ANDHRA PUBLICATION)

PHOTOSYNTHESIS IN HIGHER PLANTS

Very Short Answer Questions

1. What is the function of stroma ?



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2. The formula unit of H_2O is



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3. To produce 4 sucrose molecules the number of ATP and $NADPH + H^+$ required in C_3 plants is



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4. ATP ase enzyme needed for muscle contraction is located in



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5. What is absorption spectrum?



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6. The materials required for photosynthesis are



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7. Black man's law of limiting factor is applicable to



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8. Primary acceptor of CO_2 in C_3 cycle is



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9. What is the primary acceptor of CO_2 in C_4 plants. What is the first compound formed as a result of primary carboxylation in the C_4 pathway ?



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Short Answer Questions

1. Draw a neat labelled diagram of chloroplast.



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2. Tabulate any eight differences between C_3 and C_4 plants/cycles.



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3. Even though a very few cells in a C_4 plant carry out the biosynthetic – Calvin pathway, yet they are highly productive. Can you discuss why?



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4. Which of the following statements are true for photorespiration ?



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Long Answer Questions

1. In both cyclic and non cyclic Photophosphorylation/electron transport



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2.phase is crucial in Calvin cycle for uninterrupted and continuous cycle .



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Important Questions

1. What is photolysis of water ?



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2. ATP ase enzyme needed for muscle contraction is located in



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3. Define the law of limiting factors proposed by Blackman.



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4. Primary acceptor of CO_2 in C_3 cycle is



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5. Primary carboxylation occurs in C_3 and C_4 plants respectively with the help of



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6. Draw a neat labelled diagram of chloroplast found in leaf, and its role in photosynthesis.



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Exercises

1. By looking at a plant externally can you tell whether a plant is C_3 or C_4 ? Why and how?



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2. By looking at a plant externally can you tell whether a plant is C_3 or C_4 ? Why and how?



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3. Even though a very few cells in a C_4 plant carry out the biosynthetic – Calvin pathway, yet they are highly productive. Can you discuss why?



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4. RUB is CO is an enzyme that acts as both as a carboxylase and oxygenase. Why do you think RUB is CO carries out more carboxylation in C_4 plants ?



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5. Suppose there were plants that had a high concentration of chlorophyll b, but lacked chlorophyll a, would it carry out photosynthesis ? Then why do plants have chlorophyll b and other accessory pigments ?



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6. Why is the colour of a leaf kept in the dark frequently yellow or pale green ? Which pigment do you think is more stable ?



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7. Why was the plant kept in dark and then in sunlight ?



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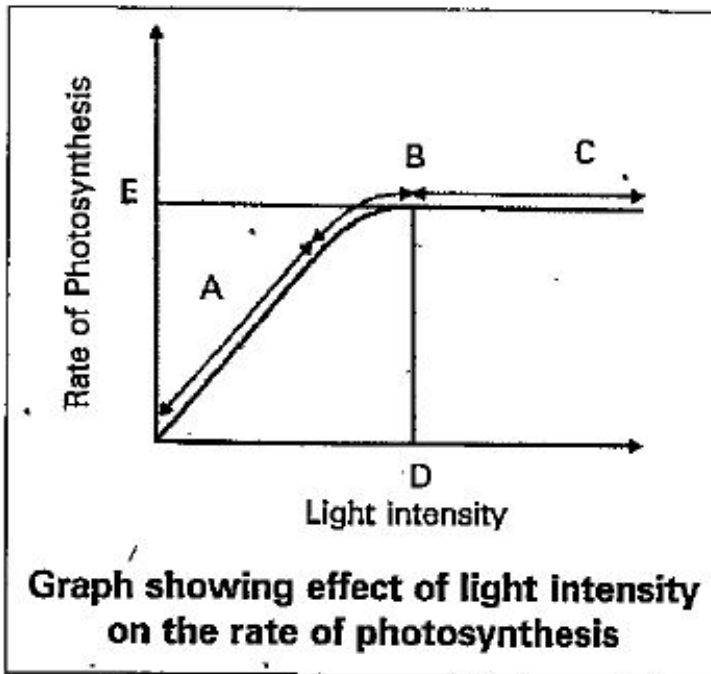
8. Figure shows the effect of light on the rate of photosynthesis. Based on the graph, answer the following questions.

a. At which points (A, B or C) in the curve is

light a limiting factor ?

b. What could be the limiting factor/s in region A ?

c. What do C and D represent on the curve ?



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9. Give comparison between the following :

a. C_3 and C_4 pathways

b. Cyclic and Non-cyclic photophosphorylation

c. Anatomy of leaf in C_3 and C_4 plants.



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10. Cyanobacteria and some other photosynthetic bacteria do not have chloroplasts. How do they conduct photosynthesis ?



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11. Why photorespiration does not occur in C_4 plants ?



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12. The orange colour of carrot root is due to the presence of



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13. What is the reason to keep a plant in dark for 48 hours to conduct experiments on photosynthesis in plants?



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14. Photosynthetic organisms occur at different depths in ocean. Do they receive qualitatively and quantitatively the same light ? How do they adapt to carry out photosynthesis under these conditions ?





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15. Look at the activities listed below. Reason out whether or not, work is done in the light of your understanding of the term work.

A green plant is carrying out photosynthesis.



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16. The matrix of both chloroplast and mitochondria are similar in having



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17. Write some of the events that occur in the chloroplasts during photosynthesis.



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18. Which of the following statements about absorption spectrum is correct ?



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