



BIOLOGY

BOOKS - MAXIMUM PUBLICATION

Photosynthesis in higher Plants

Exercise

1. Which metal ion is a constituent of a chlorophyll?

A. Iron

B. Copper

C. Magnesium

D. Zinc

Answer: C



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2. Which pigment acts directly to convert light energy to chemical energy?

A. Chlorophyll A

B. Chlorophyll B

C. Xanthophyll

D. Carotenoid

Answer: A



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3. Which range of wavelength (in nm) is called photosynthetically active radiation(PAR)?

A. 100 – 390

B. 390 – 430

C. 400 – 700

D. 460 – 100, 00

Answer: C



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4. Which light range is most effective in photosynthesis?

A. Blue

B. Green

C. Red

D. Violet

Answer: C



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5. Chemosynthetic bacteria obtain energy from

A. Sun

B. Infra red rays

C. Organic substances

D. Inorganic Chemicals

Answer: D



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6. The ATP production in photosynthesis is called

A. Phototropism

B. phosphorylation

C. Photo-oxidation

D. photophosphorylation

Answer: D



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7. Conditions helpful in photorespiration are

A. more oxygen and less carbon dioxide

B. less oxygen and more carbon dioxide

C. more temperature and less oxygen

D. more humidity and less temperature

Answer: A



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8. What is common between chloroplasts, chromoplasts and leucoplasts?

A. Presence of pigments

B. Possession of thylakoids and grana

C. Storage of starch, proteins and lipids

D. Ability to multiply by a fission-like process

Answer: D



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9. A student sets up an experiment on photosynthesis as follows: He takes soda water in a glass tumbler and keeps the tumbler

exposed sunlight hoping that he has provided necessary ingredient for photosynthesis to proceed (viz, CO_2 , H_2O chlorophyll and light) what do you think what will happen after, say few hours of exposure of light?

A. Photosynthesis will take place and glucose will be produced

B. Photosynthesis will take place and starch will be produced which will turn the mixture turbid

C. Photosynthesis will not take place because CO_2 dissolved in soda water escapes into the atmosphere

D. Photosynthesis will not take place because intact chloroplasts are needed for the process

Answer: A



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10. Photochemical reactions in the chloroplasts are directly involved in

A. Fixation of carbon dioxide

B. synthesis of glucose and starch

C. formation of phosphoglyceric acid

D. photolysis of water and phosphorylation
of ADP to ATP

Answer: D



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11. Match the following with correct combination.

<u>Column I</u>	<u>Column II</u>
A. Carboxylation	1. Oxygen evolution
B. Phosphorylation	2. Photorespiration
C. Photolysis of water	3. RUBISCO
D. Phosphoglycolate	4. Chemosynthesis
E. Nitrosomonas	5. ATP

A. 1(A), 2(B), 3(C), 4(D) , 5(E)

B. 3(A), 5(B), 1(C), 2(D), 4(E)

C. 2(A), 3(B), 5(C), 4(D), 1(E)

D. 1(A), 3(B), 4(C), 2(D), 5(E)

Answer: B



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12. Choose the correct statement.

A. The C_4 -plants do not have RUBISCO

B. Carboxylation of RUBP leads to the formation of PGA and phosphoglycolate

C. Carboxylation of phosphoenol pyruvate results in the formation of C_4 -acids

D. Decarboxylation of C_4 -acids occurs in the mesophyll cells

Answer: C



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13. In non-cyclic photophosphorylation, there are photolysis of 12 water molecules, how many H^+ are formed?

A. $24H^+$

B. $36H^+$

C. $12H^+$

D. $32H^+$

Answer: A



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14. In Hatch and Slack pathway,

A. chloroplasts are of same type

B. occurs in Kranz anatomy where mesophyll have small Chloroplasts whereas bundle sheath have granal chloroplasts

C. occurs in Kranz anatomy where mesophyll have small Chloroplasts whereas bundle sheath have larger agranal chloroplasts

D. Kranz anatomy where mesophyll cells are diffused

Answer: C



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15. To form one molecule of glucose in Calvin cycle

A. 9ATP and 36 NADPH are required

B. 6 ATP and 6 NADPH are required

C. 3 ATP and 2 NADPH are required

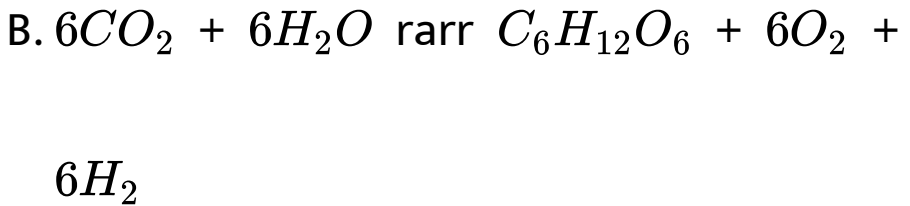
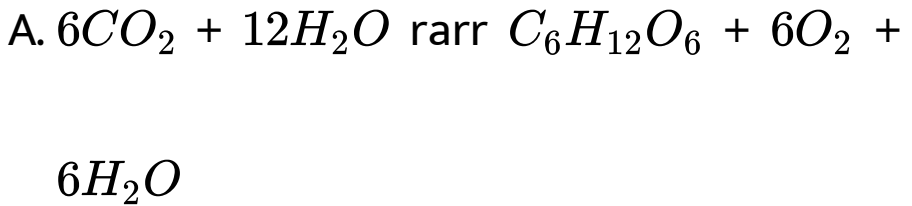
D. 18ATP and 12 NADPH are required

Answer: D



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16. Photosynthesis is correctly explained by the equation



Answer: A



17. In sugarcane plant, CO_2 is fixed into malic acid, in which the enzyme that fixes carbon dioxide is

- A. ribulose phosphate kinase
- B. fructose phosphatase
- C. ribulose biphosphate carboxylase
- D. phosphonol pyruvate carboxylase

Answer: D



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18. Which fractions of the visible spectrum of solar radiations are primarily absorbed by carotenoids of higher plants?

- A. Red and violet
- B. Violet and blue
- C. Blue and green
- D. Green and red

Answer: B



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19. Which factor is not limiting in normal condition for photosynthesis?

A. Air

B. Carbon dioxide

C. Water

D. Chlorophyll

Answer: A



20. Which of the following is used during discovery of Calvin cycle

A. Spirogyra

B. Volvox

C. Chlamydomonas

D. Chlorella

Answer: D



21. Photosynthesis in C_4 plants is relatively less limited by atmospheric carbon dioxide levels because

A. Four carbon acids are the primary initial carbon dioxide fixation products

B. the primary Fixation of carbon dioxide is mediated via PEP caroxylase

C. effective pumping of CO_2 into bundle sheath cells

D. Rubisco in C_4 plants has higher affinity
for CO_2

Answer: B



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22. NADP is converted into NADPH₂ in

- A. photosystem I
- B. photosystem II
- C. calvin cycle

D. non cyclic photophosphorylation

Answer: D



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