



BIOLOGY

BOOKS - UNIVERSAL BOOK DEPOT 1960 BIOLOGY (HINGLISH)

PHOTOSYNTHESIS IN HIGHER PLANTS

Photosynthesis In Higher Plants

1. LAW OF LIMITING FACTORS

A. Blackman

B. Hill

C. Ruben

D. Kalmen

Answer: A



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2. Who proposed the CAM pathway of CO_2 fixation

- A. Benson and associates
- B. Rouhani and associates
- C. Hatch and associates
- D. Arnon and associates

Answer: B



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**3. Two pigment system theory of photosynthesis was proposed by or
Concept of evidence for existence two photosystem is photosynthesis**

was given by

- A. Hill
- B. Blackman
- C. Emerson
- D. Arnon

Answer: C



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4. Who received the Noble Prize for working out the early carbon pathway of photosynthesis

- A. Calvin
- B. Krebs
- C. Khorana

D. Wastson

Answer: A

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5. Which of the following technique was used by Calvin in determining carbon pathway

- A. Chromatography
- B. Electronphorosis
- C. Spectrophotometry
- D. Histochemistry

Answer: A

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6. The process of photophosphorylation was discovered by

A. Calvin

B. Arnon

C. Priestly

D. Warburg

Answer: B

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7. Most of the plants contain a green colouring pigment which is responsible for photosynthesis . This pigment was named chlorophyll by

A. Melvin Calvin

B. Jean Senebier

C. Julius Robert Mayer

D. Pelletice Caventor

Answer: D

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8. Photosynthesis is the conversion of light energy within a plant' was first stated

A. Willstatter and Stoll

B. Mayor and Anderson

C. Benson and Calvin

D. Robert Mayer

Answer: D

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9. Thylakoid ' name was given by

- A. Arnon
- B. Park and Biggins
- C. Park and Fortan
- D. Manke

Answer: D

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10. The significance of light and chlorophyll in photosynthesis was discovered by

- A. Priestley
- B. Ingenhousz
- C. Engleman

D. Blackman

Answer: D

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11. 'The amount of CO_2 absorbed and O_2 released during photosynthesis are in equal volumes " was proved by

A. Engleman

B. Robert Mayer

C. Priestly

D. Bousingault

Answer: D

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12. The first important biological investigation which led to the conclusion that plant makes its substance from water and not from soil was carried out by

- A. Lamarck
- B. De Vries
- C. Van Helmont
- D. Darwin

Answer: C

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13. Early studies on the pathway of CO_2 fixation in plants were made during 1940s in

- A. Unicellular green algae by Calvin
- B. Isolated chloroplast of spinach by Hill

C. Mesophyll cells of variegated leaves by Arnon

D. Bundle sheath cells of maize by Hatch and Slack

Answer: A



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14. Who proposed the cycle of events leading to the fixation of CO_2 in mesophyll and its reduction in bundle sheath

A. Emerson

B. Melvin Calvin

C. Hatch and Slack

D. Hill and Bendall

Answer: C



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15. The scientist who proved that bacteria use H_2S gas and CO_2 to synthesize carbohydrate is .

- A. Van Niel
- B. Ruben
- C. Jean Senebier
- D. Julius Robert Mayer

Answer: A

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16. Emerson's enhancement effect and red drop have been instrumental in the discovery of

- A. Photophosphorylation and non-cycline electron transport
- B. Two photostyems operating simultaneously

C. Photophosphoryation and cyclic electron transport

D. Oxidative phosphorylation

Answer: D



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17. What plant is used in a experiment commonly performed in a laboratory in demonstrate eveloution of oxygen in photosynthesie

A. Sunflower

B. Hydrilla

C. Croton

D. Balsam

Answer: B



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18. Englemann's experiment with *Spirogyra* demonstrated that

- A. The full spectrum of sunlight is needed for photosynthesis
- B. Only red wavelengths are effective in causing photosynthesis
- C. Only blue wavelength are effective
- D. Both blue and red wavelength are effective

Answer: D



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19. Two plants A and B are supplied with CO_2 with H_2O^{18} and releases O^{18} type oxygen in photosynthesis

- A. A plant
- B. B plant

C. Both (a) and (b)

D. First (a) and then (b)

Answer: A



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20. Isotopes popularly known to have been used in the study of photosynthesis are

or

Which of the following isotope of carbon was used by Calvin to trace the path of carbon in photosynthesis

A. C^{14} and O^{18}

B. C^{11} and C^{32}

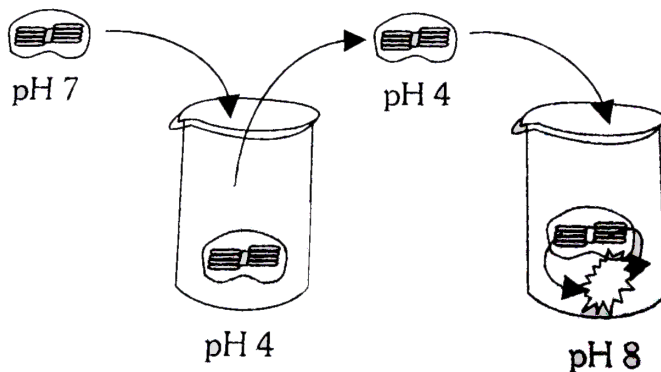
C. C^{16} and N^{15}

D.

Answer: A

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21. The given diagram represents an experiment with isolated chloroplasts. The chloroplasts were first made acidic by soaking them in a solution at pH 4. After the thylakoid space reached pH 4, the chloroplasts were transferred to a basic solution at pH 8. The chloroplasts are then placed in the dark. Which of these compounds would you expect to be produced



A. $C_6H_{12}O_6$

B. $G3P$

C. *NAD*

D. *ATP*

Answer: D



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22. Path of carbon in photosynthesis was found by using

A. Centrifugation

B. Radio isotopes

C. Fractionation

D. Chromatography

Answer: B



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23. Person who received Nobel Prizes for their work with green plants are

- A. Calvin and Waston
- B. Calvin and Borlang
- C. Beadle and Tatum
- D. Flemming and Walksaman

Answer: B



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24. Which of the following with respect to early experiments of photosynthesis is wrongly matched

- A. Joseph Priestly- Showed that plants release O_2

B. Jan Ingenhousz- Showed that sunlighth is essential for photosynthesis

C. Julius von Sachs - Proved that plants produce glucose when they grow

D.

Answer: D

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25. The path of CO_2 in the dark reaction of photosynthetic was successfully traced by the use of the following or The dark reaction is traced by

A. O_2^{18}

B. $C^{14}O_2$

C. P^{36}

D. X – rays

Answer: B

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26. Algae used by Calvin and associates for photosynthetic research is
or

The experimental material that has largely been responsible for the
making rapid advances in research on photosynthesis is
or

Warburg studied his effect on .

A. Chlorella

B. Chlamydomonas

C. Volvox

D. All the above

Answer: A

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27. The oxygen produced during photosynthesis comes from photolysis of water was first time proved by

- A. Rubben and Kamen
- B. Robert Mayer
- C. Malvin Calvin
- D. Blackman

Answer: A

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28. The first experiment on photosynthesis in flashing light were carried out by

- A. F.F. Balackman
- B. Robert Emerson and Arnold
- C. Melvin Calvin
- D. Robert Hill

Answer: B

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29. Moll's experiment show

- A. Unequal transpiration from the surfaces of leaf
- B. Relation between transpiration and absorption
- C. CO_2 is required for photosynthesis

D. Chlorophyll is essential for photosynthesis

Answer: C

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30. The plants growing in dark show yellowing in leaves and elongated internodes, this condition is called as

- A. Etiolation
- B. Chlorosis
- C. Dechlorosis
- D. Respiration in animals

Answer: A

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31. The most vital process for the existence of life on earth is

- A. Communication in animals
- B. Photosynthesis by plants
- C. Reproduction in plants and animals
- D.

Answer: B

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32. Match the following and choose the correct combination from the options given

Column - I		Column - II	
A.	Visible light	1.	0.1 to 1 nm
B.	Ultraviolet	2.	400 to 700 nm
C.	X-Rays	3.	Longer than 740 nm
D.	Infrared	4.	100 to 400 nm
		5.	< 0.1 nm

A. A-1, B-3, C-4, D-5

B. A-3, B-2, C-1, D-5

C. A-4, B-3, C-2, D-1

D. A-2, B-4, C-1, D-3

Answer: D



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33. How many molecules of water are needed by a green plants to produce one molecule of hexose/ reduce 6 molecules of CO_2

A. 6

B. 12

C. 24

D. One only

Answer: B



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34. The first event in photosynthesis is

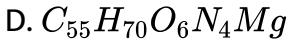
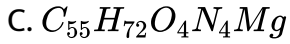
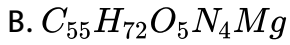
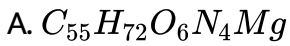
- A. Sythesis of ATP
- B. Photoexcitation of chlorophyll and ejection of electron
- C. Photolysis of water
- D. Release of oxygen

Answer: D



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35. Which of the following represents the correct molecular formula of chlorophyll-b



Answer: D

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36. Solar energy is converted into ATP in

or

Light energy is converted into chemical energy in the presence of

A. Mitochondria

B. Chloroplasts

C. Ribosomes

D. Peroxisome

Answer: B

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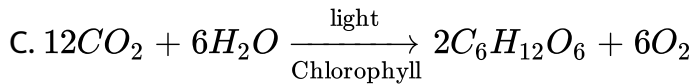
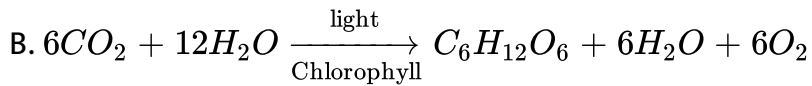
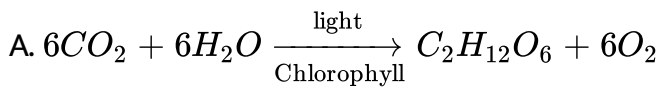
37. Which process is related with photosynthesis

- A. Phosphorylation
- B. Translation
- C. Transcription
- D. None of these

Answer: A

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38. Which of the following equation can be more appropriate for the photosynthesis



D. None of these

Answer: B

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39. Quantansomes are found in

A. Surface of cristae

B. Surface of plasma membrane

C. Surface of nuclear membrane

D. Surface of thylakoids

Answer: D

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40. The full expansion of NADP is

- A. Nicotinamide adenime disphosphate
- B. Nicotinamide adenosime disphosphate
- C. Nicotinamide adenine dinucleotide phosphate
- D. Nicotinamide adenosine dinucleotide phosphate

Answer: C

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41. Make suitable pair

- | | |
|---------------------------|--------------------------|
| (A) Emersom effect | (a) C_4 cycle |
| (B) Hill reaction | (b) Photolysis |
| (C) Calvin's cycle | (c) C_3 cycle |
| (D) Hatch and slack cycle | (d) Photosysten-I and II |

A. Aa, Bb,Cc,Dd

B. Aa, Bc, Cd, Db

C. Ac , Bd, Ca, Db

D. Ad, Bb, Cc, Da

Answer: D

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42. Suspension of isolated thylakoids in culture medium containing CO_2 and H_2O does not produce hexose due to absence of which of the following

A. ATP

B. Enzyme

C. Proteins

D. Hill reagent

Answer: B

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43. Match the sites in column I with the process in column II and choose the correct combination from the options

	Column I		Column II
A.	Grana of chloroplast	1.	Kreb's cycle
B.	Stroma of chloroplast	2.	Light reaction
C.	Cytoplasm	3.	Dark reaction
D.	Mitochondrial matrix	4.	Glycolysis

A. A-4, B-3, C-2, D-1

B. A-1, B-1, C-3, D-4

C. A-2, B-1, C-3, D-4

D. A-2, B-3, C-4, D-1

Answer:

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44. 85-90% of all photosynthesis of the carried out by

or

The maximum evolution of oxygen is by greated produces of organic matter

A. Shrubs

B. Herbs

C. Oceanic algae/ Phytoplanktons

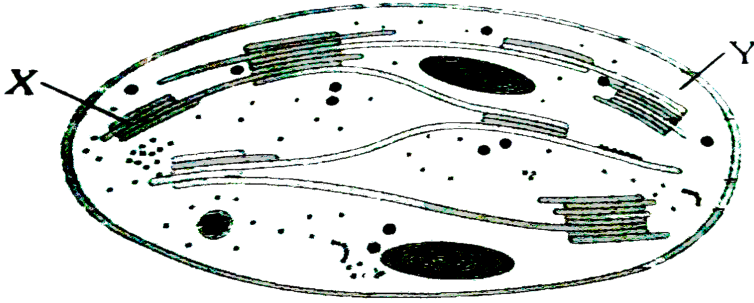
D. Trees with large bracnces

Answer: C



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45. See the following diagram and identify x and y with their functions



X		Y		
	Structure	Function	Structure	Function
(a)	Grana	CO ₂ fixation	Lamellae	Photolysis of water
(b)	Stroma	Photolysis	Grana	CO ₂ fixation
(c)	Grana	CO ₂ fixation	Stroma	Photolysis of water
(d)	Grana	Photolysis of water	Stroma	CO ₂ fixation

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46. In photosynthesis , energy from light reaction to dark reaction is transferred in the form of

A. ADP

B. ATP

C. RUDP

D. Chlorophyll

Answer: B



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47. The sythesis of ATP in photosynthesis and respiration is essentially an oxidation - reduction process invlviong removal of energy from
or

Which one the is always transferred in redox reaction

A. Oxygen

B. Phtochrome

C. Cytochrome

D. Electron

Answer: D



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48. In photosynthesis plants .

A. Absorb O_2 and release CO_2

B. Absorb CO_2 and release O_2

C. Absorb NH_3 and release N_2

D. Absorb N_2 and release NH_3

Answer: B



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49. Wavelength of green light is

A. $400 - 450m\mu$

B. $500 - 550m\mu$

C. $660 - 720m\mu$

D. $720 - 800m\mu$

Answer: B

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50. Chemosynthesis and photosynthesis are alike in that both

- A. Are associated with heterotroph
- B. Requires sunlight as an energy source
- C. Methods of autotrophic nutrition
- D. Occur in tracheophytes

Answer: C

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51. Ribulose diphosphate carboxylase oxygenase is location in

- A. Mitochondria
- B. Chloroplasts
- C. Peroxisomes
- D. Golgi bobies

Answer: B



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52. The precentag of light energy utilized for photosynthesis by higher plants is

- A. 100 %
- B. 50 %
- C. 10 %

D. $1 \text{ to } 2\%$

Answer: D

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53. During photosynthesis

A. Both CO_2 and water get oxidized

B. Both CO_2 and water get reduced

C. Carbon dioxide get reduced, water get oxidised and ATP is
formed

D.

Answer: D

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54. Intensity of light can be measured by

- A. Luxmeter
- B. Wilmott's bubbler
- C. Ganong's potometer
- D. Faemer's potometer

Answer: A



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55. Assimilatory power refers to

- A. Generation of ATP and $NADPH_2$
- B. Reduction of CO_2
- C. Splitting of water
- D. Disintegration of plastids

Answer: A



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56. Grana refers to

- A. Stacks of theylakoids in plantids of higher plants
- B. A constant in quantum equation
- C. Glycolysis of glucose
- D. Bye produced of photosynthesis

Answer: A



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57. Intact chloroplast from green leaves can be isolated by

A. Acetone

B. Ethanol

C. Alcohol

D. Sugar solution

Answer: A



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58. Diamorphic choroplasts are present in

A. Sugracane (C_4)

B. Cotton

C. Pea

D. Mango

Answer: A

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59. Phenomenon which converts light energy into chemical energy is

- A. Respiration
- B. Photosynthesis
- C. Transpiration
- D. None of these

Answer: B

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60. For the process of photosynthesis all except

- A. Water, minerals
- B. Light, chlorophyll

C. CO_2 optimum temperature

D. Oxygen , sucrose

Answer: D



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61. Plants are known as purifiers for air due to process of

A. Respiration

B. Photosynthesis

C. Transpiration

D. Desiccation

Answer: B



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62. In the overall process of photosynthesis , the number of CO_2 water , sugar and O_2 molecules utilized and produced is

A. 12

B. 13

C. 19

D. 31

Answer: D



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63. CO_2 is formed all of the following except

A. Buring of sugar

B. Respiration in plants

C. Photosynthesis by plants

D. On heating of limestone

Answer: C

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64. Quantansomes contain

A. 200 chlorophyll molecules

B. 230 chlorophyll molecules

C. 250 chlorophyll molecules

D. 300 chlorophyll molecules

Answer: B

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65. Which one the following is energy in currency of the cell or the cell or the The common immediate source of energy in cell activity is

A. Phosphate

B. ATP

C. ADP

D. AMP

Answer: B

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66. For photosynthesis (i.e . For the synthesis of organic matter,) the green plants need only

A. Light

B. Chlorophyll

C. CO_2 and water

D. All of these

Answer: D



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67. Manganese and chlorine is required in

A. Nucleic acid synthesis

B. Plant cell wall formation

C. Photolysis of water during photosynthesis

D. Chlorophyll synthesis

Answer: C



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68. Stroma in the chloroplasts of higher plant contains

- A. Light-independent reaction enzymes
- B. Light-dependent reaction enzymes
- C. Ribosomes
- D. Chlorophyll

Answer: A

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69. Number of thylakoids in a granum is

- A. 5 – 10
- B. 2 – 100
- C. 100 – 150

Answer: B

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70. Consider the following statements with respect to photosynthesis

(A) The first carbon dioxide acceptor in C_4 cycle is PGA

(B) In C_3 plants, the first stable product of photosynthesis during dark reaction is RuBP

(C) Cyclic photophosphorylation results in the formation of ATP

(D) Oxygen which is liberated during photosynthesis comes from water

A. A and B alone are correct

B. A and C alone are correct

C. C and D alone are correct

D. B and C alone are correct

Answer: C



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71. Consider the following statements

(A) The portion of the spectrum between 500nm and 800 nm is also referred to as photosynthetically active radiation (PAR)

(B) Magnesium, calcium and chloride ions play prominent roles in the photolysis of water

(C) In cyclic photophosphorylation, oxygen is not released (as there is no photolysis of water) and NADPH is also not produced

A. A is true, but B and C are false

B. A and B are false, but C is true

C. B is true, but A and C are false

D. A and B are true, but C is false

Answer: B



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72. Consider the following statements regarding photosynthesis

- (A) ATP formation during photosynthesis is termed as photophosphorylation
- (B) Kranz anatomy pertains to leaf
- (C) Reduction of $NADP^+$ to NADPH occurs during Calvin cycle
- (D) In a chlorophyll molecule magnesium is present in phytol tail

- A. (A) and (B) are correct
- B. (C) and (D) are correct
- C. (A) and (C) are correct
- D. (A) and (D) are correct

Answer: A





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73. Which pigment of the plant takes part in light reaction of photosynthesis

or

Which pigment is present universally in all green plants

- A. Xanthophyll
- B. Chl-a
- C. Carotene
- D. Phycoxanthin

Answer: B



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74. Photosynthetic pigments in chloroplast are embedded in membrane of

- A. Thylakoids
- B. Photoglobin
- C. Matrix
- D. Envelope of chloroplast

Answer: A

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75. The visible portion of light spectrum useful in photosynthesis is referred to as

- A. RFLP
- B. PAR

C. VAM

D. VNTR

Answer: B



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76. Which of the following pigment is yellow in colour

A. Chlorophyll 'a'

B. Chlorophyll 'b'

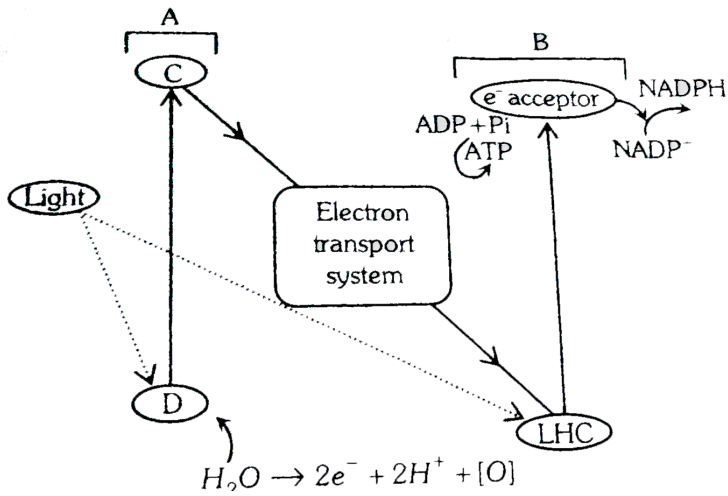
C. Carotene

D. Xanthophyll

Answer: D



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which of the following is correctly for the given figure

- A. A: PSII, B: PSI, C: e^- acceptor, D: LHC
- B. A: LHC, B: PSII, C: e^- acceptor, D: PSII
- C. A: PSII, B: PSII, C: e^- acceptor, D: LHC
- D. A: e^- acceptor, B: LHC, C: PSII, D: PSII

Answer: A

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78. Which of the following wavelength occur in red part of the spectrum

A. 470nm

B. 390nm

C. 680nm

D. 830nm

Answer: C



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79. Which of the following statement is true with regard to the light reaction of photosynthesis in plants

A. Chlorophyll A occur with peak absorption at 680 nm in photosystem I and 700nm in photosystem II.

- B. Magnesium and sodium ions are associated with photolysis of water molecules
- C. O_2 is evolved during cyclic photophosphorylation.
- D. Both ATP and $NADPH_2$ are formed during cyclic photophosphorylation

Answer: D

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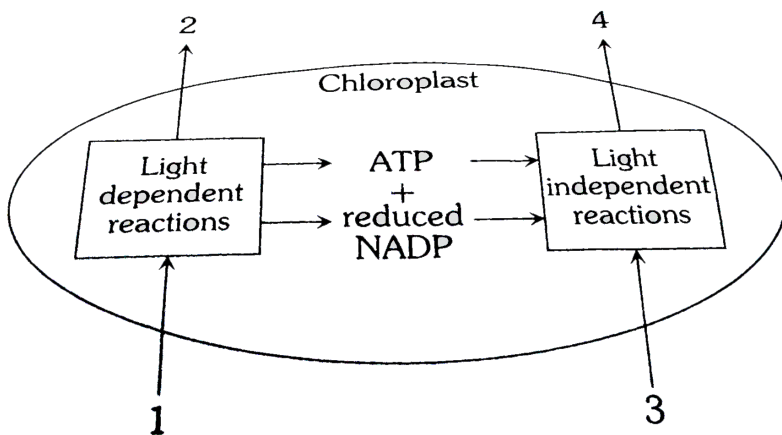
80. Excitation of chlorophyll due to light is a

- A. photooxidation reaction
- B. Endergonic reaction
- C. Thermochemical reaction
- D. photochemical reaction

Answer: A

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81. The given diagram indicates the movement of substances into in and out of a chloroplast



	1	2	3	4
(a)	Sugar	H ₂ O	ATP	O ₂
(b)	H ₂ O	O ₂	CO ₂	Sugar
(c)	CO ₂	H ₂ O	Sugars	O ₂
(d)	CO ₂	ATP	H ₂ O	Starch

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82. Solarization is

- A. Formation of chlorophyll
- B. Destruction of chlorophyll
- C. Utilisation of sunlight
- D. Effects of solar light

Answer: B



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83. Which statement about photosynthesis is false

- A. The electron carriers involved in photophosphorylation are located on the thylakoid membranes
- B. photosynthesis is a redox process in which water is oxidised and carbon dioxide is reduced

C. The enzymes required for carbon fixation are located only in the grana of chloroplasts

D. In green plants, both $PS - I$ and PS_{II} are required for the formation of $NADPH + H^+$

Answer: C

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84. Which one of the following is not true about the light reactions of photosynthesis

A. Light energy provides energy for the photolysis of water through excitation of the reaction centre of PS_{II}

B. The flow of electrons from water to NADP in non-cyclic electron transport produces one ATP

C. Reactions of the two photosystems are needed for the reaction of NADP

D. P_{680} and P_{700} the reaction centres of PSI and PSII respectively

Answer: D

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85. Which of the following is photophosphorylation

A. Production of ATP from ADP

B. Production of NADP

C. Synthesis of ADP from ATP

D. Production of PGA

Answer: B

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86. In chlorophyll structure four pyrrole ring are united with Mg by their atoms of

A. N

B. C

C. H

D. O

Answer: A

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87. The first acceptor of electrons from an excited chlorophyll molecule of photosystem II is

A. Cytochrome

B. Iron - sulphur protein

C. Ferredoxin

D. Quinone

Answer: D



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88. Dcmu

A. Inhibits PS-I

B. Inhibits PS_II

C. Destroy choroplast

D. Inhibits oxidative phoosphorylation

Answer: A



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89. $NADPH_2$ is generated through

Or

Ferredoxin is a component of

- A. Glycolysis
- B. photosystem -I
- C. photosystem -II
- D. An aerobic respiration

Answer: B



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90. photolysis of each water molecule in light reaction will yield

- A. 2 electrons and 4 protons

B. 4 electrons and 4 protons

C. 4 electrons and 3 protons

D. 2 electrons and 2 protons

Answer: D

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91. Which of the following statements is true with regard to the light reaction of photosynthesis

A. In PSII the reaction centre chlorophyll a has an absorption peak at 700 nm, hence is called P 700

B. In PS I the reaction centre chlorophyll a has an absorption maxima at 680 nm and is called P680

C. The splitting of water molecule is associated with PSI

D. Photosystems I and II are involved in Z scheme

Answer: D

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92. Which one of the following statements about the events of noncyclic photophosphorylation is not correct

- A. Only one photosystem participates
- B. ATP and *NADPH* are produced
- C. photolysis of water takes place
- D. O_2 is released

Answer: A

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93. In which stage of photosynthesis, light is directly necessary

- A. For electron exitaion
- B. For reducation of CO_2
- C. For regulating photosystem
- D. For cyclic photophosphorylation

Answer: A

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94. The soure of O_2 liberated in photosyntheisi in green plants is

- A. photosynthetic enzyme
- B. Carbohydrate present in leaf
- C. Water
- D. carbon dioxide

Answer: C

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95. Photolysis of water takes place in

- A. Calvin cycle
- B. Glycolysis
- C. Light phase
- D. Dark phase

Answer: C

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96. The site of oxygen evolution and photosynthetic phosphorylation in chloroplast are

- A. Matrix

B. Grana stacks

C. Inner wall of chloroplast

D. Surface of chloroplast

Answer: B



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97. The specific function of light energy in the process of photosynthesis is to

A. Activate chlorophyll

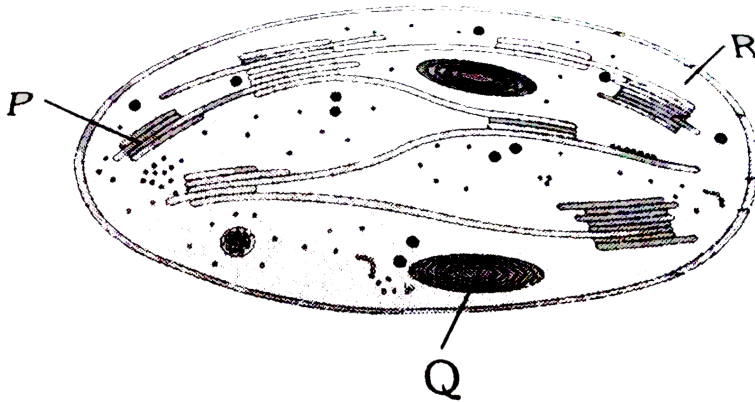
B. Split water

C. reduce carbon dioxide

D. synthesize glucose

Answer: A

98. The diagram shows the ultra structure of a chloroplast as seen in section .Identify the functions of P,Q and R



	P	Q	R
(a)	Light reaction	Carbohydrate synthesis	Carbohydrate storage
(b)	Light reaction	Carbohydrate storage	Carbohydrate synthesis
(c)	Light reaction	Carbohydrate synthesis	Carbohydrate storage
(d)	Carbohydrate storage	Carbohydrate synthesis	Light reaction

99. NADP is converted into $NADPH_2$ in

- A. Photosystem -I
- B. Non- cyclic photophosphoryation
- C. Calvin cycle
- D. Photosystem -II

Answer: B

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100. The creation of proton gradient across the thylakoid membrane is a result of

- A. Decrease in proton number in stroma
- B. Accumulation of protons in the lumen
- C. Decrease in the PH in the lumen
- D. all of the above

Answer: D



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101. Read the following four statements A, B, C and D and select the right option having both correct statements.

statements

(a) Z scheme of light reaction takes place in presence of PS I only .

(B) Only PS I is functional in cyclic photosporylation

(c) Cyclic photophosphorylation results into synthesis of ATP and

$NADPH_2$

(D) Stroma lamllae lack PSII as well as NADP

A. (B) and(D)

B. (A) and (B)

C. (B) and(c)

D. (C) and (D)

Answer: A



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102. photosynthetic unit is

- A. Glyoxysome
- B. Sphaerosome
- C. microsome
- D. Phycobilins

Answer: D



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103. P_{700} is a special form of which pigment

A. Chlorophyll b

B. carbotenses

C. Chorophyll a

D. phycobilins

Answer: C



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104. Water soluble pigments found in plant cell vacuoles are

A. chlorophyll

B. Carotene

C. Anthocyanin / phycobilin

D. Xanthophyll

Answer: C

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105. Where does the primary photchemical reaction occur in chloroplast or where does the light reactions of photosynthesis take place or Light reaction takes place in

- A. Stroma
- B. Endoplasmic reticulum
- C. Quantasome or thylakoids (Grana)
- D. Inner membrane of chloroplast

Answer: C

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106. The trapping centre of light energy in photosystem-I is
or

Pigment system-I receives radiant energy and releases electron

A. P-660

B. P-680

C. P-700

D. P-720

Answer: C



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107. Blue -green algae shows

A. Chlorophyll 'a'

B. Chlorophyll 'b'

C. both (a) and (b)

D. None of the above

Answer: A

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108. Pigment system-I conducts

- A. Cyclic photophosphorylation
- B. Non-cyclic photophosylation
- C. both (a) and (b)
- D. None of the above

Answer: A

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109. Pigment system-II is concerned with

A. Photolysis of water

B. Reduction of CO_2

C. Flowering

D. None of the above

Answer: A

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110. The role of chlorophyll in photosynthesis is

A. Absorption of CO_2

B. Absorption of light

C. Absorption of light and photochemical decomposition of water

D. Absorption of water

Answer: C

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111. Photophosphorylation is a process in which

- A. Light energy is converted into chemical energy in the form of ATPs
- B. NADP is formed
- C. Chemical energy is used to produce ATP
- D. CO_2 is reduced to carbohydrate

Answer: A

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112. Which one of the following statements about cytochrome P_{450} is wrong

- A. It has a important role in metabolism
- B. It contains iron
- C. It is a coloured cell
- D. It is an enzyme involved in oxidation reactions

Answer: C

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113. Chlorophyll is present

- A. On the surface of chloroplast
- B. In the stroma of chloroplast
- C. In the grana of chloroplast
- D. Dispersed throughout the chloroplast

Answer: C

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114. Through which of the following substances the photosystem-I passes an electron to NADP during light reactions

- A. Plastocyanin
- B. Plastoquinone
- C. Cytochrome
- D. Ferredoxin

Answer: D

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115. During photochemical reactions of photosynthesis

- A. Liberation of oxygen takes place

B. Formation of ATP and $NADPH_2$ take place

C. Liberation of O_2 and formation of ATP and $NADPH_2$ take place

D. Assimilate of CO_2 takes place

Answer: C

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116. The core metal of chlorophyll is

Or

Which element is left when chlorophyll is burnt

A. Fe

B. Mg

C. Ni

D. Cu

Answer: B



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117. Hill's reaction take place in

- A. Dark
- B. Light
- C. Dark and light both
- D. At any time

Answer: B



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118. In photosynthesis light energy is utilized in

- A. Converting ATP into ADP
- B. Changing CO_2 into carbohydrate
- C. Converting ADP into ATP
- D. All of the above

Answer: C

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119. Main pigment involved in transfer of electrons in photosynthesis is

- A. Cytochromo
- B. Phytochrome
- C. both (a) and (b)
- D. None of these

Answer: A

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120. ATP is produced during

- A. Cyclic photophosphorylation
- B. Non cyclic photosphorylation
- C. Both
- D. None

Answer: C

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121. Splitting of water in photosynthesis is called

- A. Dark reaction
- B. Electron transfer
- C. Photolysis
- D. Phototropism

Answer: C

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122. Chlorophyll is

- A. Soluble in organic solvents
- B. Soluble in water
- C. Soluble in both organic solvents and water
- D. None of the above

Answer: A

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123. In noncyclic photophosphorylation , the pigment molecules first excited is

A. P_{680}

B. P_{700}

C. Chlorophyll-b

D. Xanthophyll

Answer: A

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124. The z' scheme of photosynthesis was proposed by

A. Hill and Bendall

B. Emerson

C. Arnon

D. Rabinowitch and Govindjee

Answer: A



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125. Hill's law in photosynthesis shows

A. Electron excitation

B. Removal of water

C. Fixation of CO_2

D. O_2 is obtained from water

Answer: D



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126. Chloroplasts absorb light of wavelength

- A. $200 - 300m\mu$
- B. $8700 - 1000m\mu$
- C. $460 - 660m\mu$
- D. $300 - 400m\mu$

Answer: A



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127. The reaction centre for PS-I and PS-II are

- A. P_{700} and P_{680} respectively
- B. P_{680} and P_{700} respectively
- C. P_{580} and P_{700} respectively

D. P_{700} and P_{580} respectively

Answer: A

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128. Photo-oxidation of water results in the formation of

A. H^+ , O_2 and ATP

B. H^+ , O_2e^- and ATP

C. H^+ , O_2 and e^-

D. None of these

Answer: C

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129. Photosystem-I contains

A. chl-a,chl-b, carotenoid and P_{680}

B. chl-a,chl-b, and P_{690}

C. chl-a,chl-b, and P_{700}

D. Chl-a, xanthophyll and P_{700}

Answer: C



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130. which one of the following elements is required for photosynthesis oxygen evolution

A. Copper

B. Iron

C. Manganese

D. Zinc

Answer: C

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131. Photolysis of water by isolated chloroplasts was demonstrated by

A. Robin Hill

B. Van Niel

C. Liebig

D. Calvin

Answer: A

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132. Photosynthetically active radiation (PAR) represents the following range of wavelength

- A. 340-450 nm
- B. 400-700 nm
- C. 500-600 nm
- D. 450-950 nm

Answer: B

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133. Plants adapted to low light intensity have

- A. More extended root system
- B. Leaves modified to spines
- C. Larger photosynthetic unit size than the sun plants

D. Higher rate of CO_2 fixation than the sun plants

Answer: D

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134. Hill reaction occurs in

- A. High altitude plants
- B. Total darkness
- C. Absence of water
- D. Presence of ferredoxin

Answer: B

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135. ATP formation in photosynthesis is known as

- A. Phosphorylation
- B. Photophosphorylation
- C. Oxidative phosphoruylation
- D. None of the above

Answer: B



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136. In photosystem-I the first electron acceptor is

- A. Plastocyanin
- B. An iron-sulphur protein
- C. Ferredoxin
- D. Cytochrome

Answer: D

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137. During non-cyclic photophosphorylation in which of the following, $4e^-$ produced through photolysis will enter

- A. PS-II
- B. PC
- C. PQ
- D. PS-I

Answer: A

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138. O_2 evolution is directly associated with

Or

Which of the following does not participate when the light reaction synthesizes only ATP or performs the cyclic flow of electrons

- A. PS-I
- B. PS-II
- C. Phytochrome
- D. Phycocyanin

Answer: B

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139. H_2 donor during photosynthesis is

- A. NADH

B. NADP

C. ATP

D. NADPH

Answer: D



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140. The wavelength of light most absorbed during photosynthesis is

A. 440 m

B. 550 m

C. 660 m

D. 700 m

Answer: A



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141. The light absorbed by the chlorophyll is at the wavelength of

A. 400 mm

B. 500 m

C. 600 mm

D. 660 mm

Answer: D



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142. Number of chlorophyll arranged per reaction centre in the light harvesting complex are

A. 100

B. 200

C. 400

D. 500

Answer: B



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143. Photosystem I and Photosystem II are found in

A. Stroma of chloroplast

B. Grana of chloroplast

C. Matrix of mitochondria

D. Inner membrane of mitochondria

Answer: B



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

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

Answer: A



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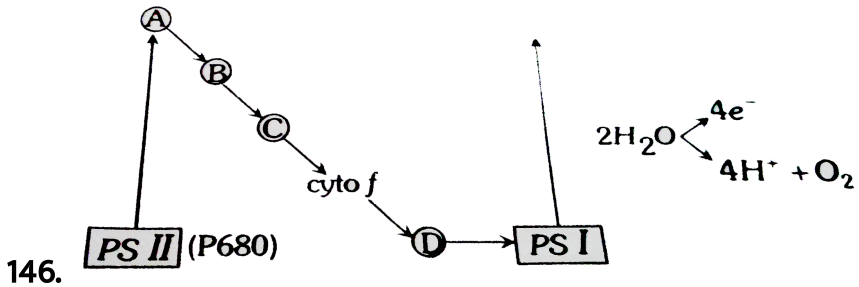
145. Chlorophyll 'a' and 'b' shows minimum absorption in

- A. Blue region
- B. Red region
- C. Blue and red regions

D. Yellow and violet regions

Answer: C

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In the above schematic diagram, which is plastocyanin

A. C

B. D

C. A

D. B

Answer: B



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147. How chlorophyll would appear when seen in red light

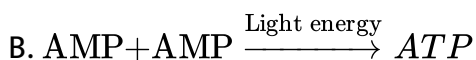
- A. Red
- B. Green
- C. Black
- D. Colourless

Answer: C



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148. Which of the following concerns photophosphorylation





Answer: C

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149. Who revealed the chemical composition of chlorophyll carotene and xanthophyll

- A. Govindjee
- B. Willstatter and Stoll
- C. Park and Biggins
- D. Meyers and French

Answer: B

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150. Which one is CU^{++} containing pigmentt

- A. Feredoxin
- B. Plastocyanin
- C. Plastoquinone
- D. Cytochrome

Answer: B



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151. The chlorophyll abosorb visible light in the regin of the following wavelength

- A. 400 nm to 500 nm only
- B. 600 nm to 800 nm only

C. 400 nm to 500 nm and 600 nm to 700 nm

D. 300 nm to 400 nm only

Answer: C



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152. Which of the following is not a product of light reaction of photosynthesis

A. ATP

B. NADH

C. NADPH

D. Oxygen

Answer: B



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153. Dark reaction of photo synthesis is called

- A. hotic action
- B. Black action
- C. Blackman's reaction
- D. None of the above

Answer: C



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154. The Calvin cycle proceeds in three stages

- (1) Reduction, during which carbohydrate is formed at the expense of the photochemically made ATP and NADPH
- (2) Regeneration, during which the carbon dioxide acceptor ribulose-1,5-biphosphate is formed

(3) Carboxylation during which carbon dioxide combines with ribulose-1,5-biphosphate is formed

A. 3 – 1 – 2

B. 3 – 2

C. 1 – 2 – 3

D. 2 – 1 – 3

Answer: A



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155. PGA as the first CO_2 fixation product was discovered in photosynthesis of

A. Alga

B. Bryophyte

C. Gymnosperm

D. Angiosperm

Answer: A

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156. Identify the incorrect statement with respect to Calvin cycle

A. The carboxylation of RuBP is catalysed by rubisco

B. The first stable intermediate compound formed is phosphoglycerate

C. 18 molecules of ATP are synthesized during carbon fixation

D. $NADPH + H^+$ produced in light reaction is used to reduce diphosphoglycerate

Answer: C

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157. The enzyme responsible for primary carboxylation in C_3 plants is

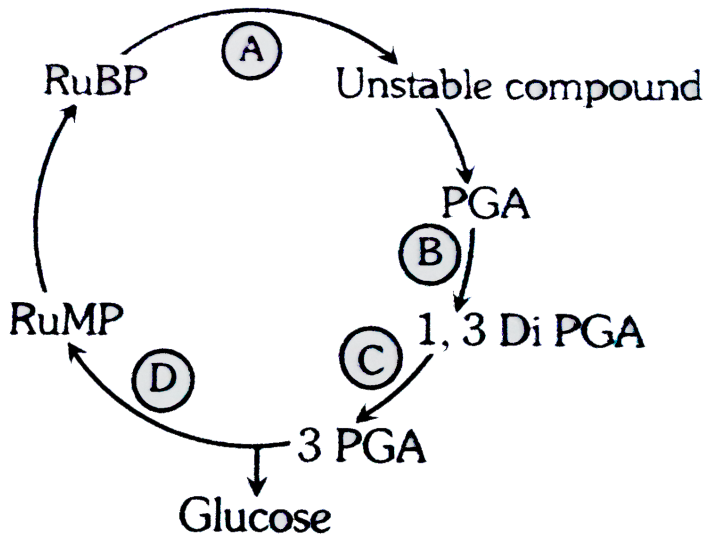
- A. Helicase
- B. Succinic dehydrogenase
- C. Pyruvate carboxylase
- D. RuBP carboxylase oxygenase

Answer: D

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158. In a condensed schematic representation of dark reaction of photosynthesis given below, steps are indicated by alphabets. Select

the option where the alphabets are correctly identified



A. $A = CO_2$ fixation, B=Reduction, C=Phosphorylation,
D=Regeneration

B. A=Regeneration, B= CO_2 fixation, C=Reduction,
D=Phosphorylation,

C. $A = CO_2$ fixation, B=Phosphorylation, C=Reduction,
D=Regeneration

D.

Answer: C

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159. If bundle sheath cells of the C_4 plants are infected by an organism, which utilizes CO_2 efficiently then which process will be affected very first

A. $PGAL \rightarrow RUBP$

B. $PGAL + PGA \rightarrow$ Glucose

C. $PGA \rightarrow PGAL$

D. $RUBP \rightarrow PGA$

Answer: D

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160. For the same amount CO_2 fixed s C_4 plant, in comparison with a C_3 plants, lose only

- A. Half amount of water
- B. Equal amount of water
- C. Double amount of water
- D. None of the above

Answer: B

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161. Which of the following is the main product in the photorespiration of C_3 plants

- A. Phosphoglycerate
- B. Phosphoglucolate

C. Glycerate

D. Glycolate

Answer: D



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162. During Calvin cycle the total number of CO_2 , ATP and NADPH molecules utilized and glucose, ADP and NADP molecules generated is

A. 31

B. 36

C. 61

D. 67

Answer: D



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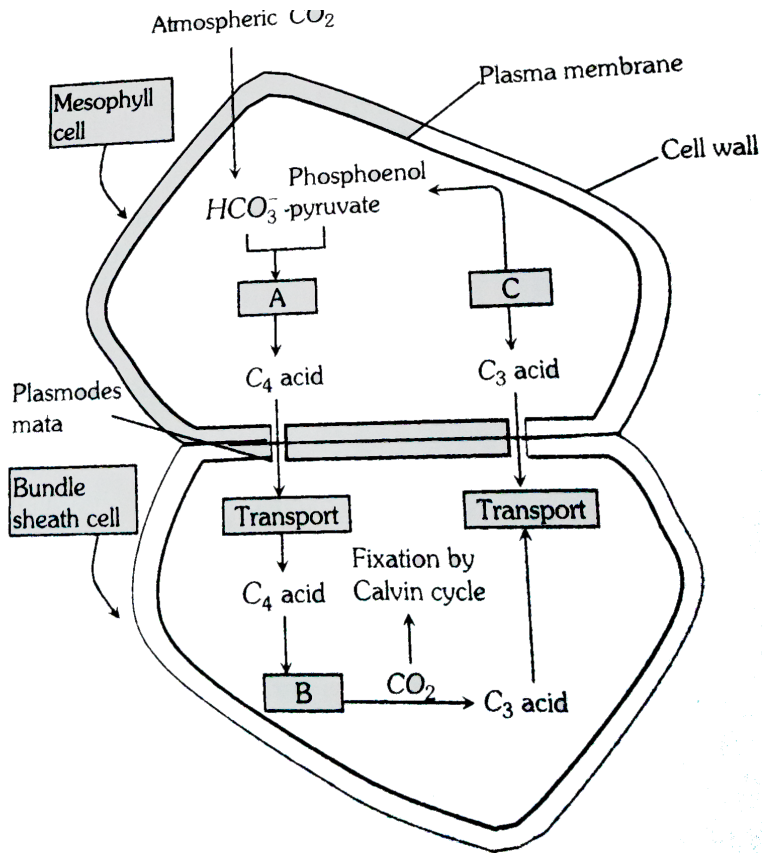
163. CO_2 joins the photosynthetic during

- A. Light reaction
- B. Dark reaction
- C. Photosystem-I
- D. Photosystem-II

Answer: B



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164.

In which of the following option correct words for all the three blanks

A, B and C are indicated

	A	B	C
(a)	Decarboxylation	Reduction	Regeneration
(b)	Fixation	Transamination	Regeneration
(c)	Fixation	Decarboxylation	Regeneration
(d)	Carboxylation	Decarboxylation	Reduction

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165. The initial enzyme of Calvin cycle is

- A. Ribulose 1,5-diphosphate carboxylase
- B. Triose phosphate dehydragenase
- C. Cytochrome oxidase
- D.

Answer: A



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166. During photosynthesis when PGA is changed into phosphoglyceraldehyde, which of the following reaction occur

- A. Oxidation
- B. Reduction
- C. Electrolysis

D. Hydrolysis

Answer: B

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167. Ribulose diphosphate carboxylase enzyme catalyses the carboxylation reaction between

- A. Oxaloacetic acid and acetyl CoA
- B. CO_2 and ribulose 1,5 diphosphate
- C. Ribulose diphosphate and phosphoglyceraldehyde
- D. PGA and dihydroxy acetone phosphate

Answer: B

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168. Calvin dark occure in

- A. Chloroplasts
- B. Cytoplasm
- C. Mitochondria
- D. Glyoxysomes

Answer: A



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169. During dark reaction of photosynthesis

- A. Water split
- B. CO_2 is reduced to organic comounds
- C. Chlorophyll is activated
- D. 6 carbon sugar is broken down into 3 carbon sugar

Answer: B



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170. 3-PGA is first stable product in

- A. Carbon reduction cycle
- B. OAA
- C. Malic acid
- D. PEP

Answer: A



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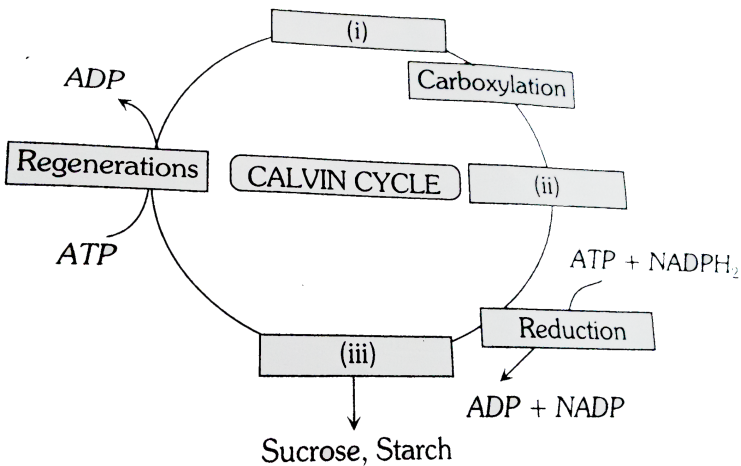
171. In C_3 plants, the first stable product of photosynthesis during dark reaction is

- A. 3-phosphoglyceric acid
- B. phosphoglyceraldehyde
- C. Malic acid
- D. Oxaloacteic acid

Answer: A

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172. Choose the correct combination of labelling the carboxylic molecule involved in the Calvin cycle.



A. (i) RuBP (ii) Triose phosphate (iii) PGA

B. (i) PGA (ii) RuBP (iii) Triose phosphate

C. (i) PGA (ii) RuBP (iii) Triose phosphate

D. (i) Triose phosphate (ii) PGA (iii) RuBP

Answer: D

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173. One molecule of glucose in Calvin cycle is formed from

A. $6CO_2 + 12ATP$

B. $6CO_2 + 30ATP + 12NADPH$

C. $6CO_2 + 18ATP + 12NADPH$

D. $6CO_2 + 18ATP + 30NADPH$

Answer: C

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174. Calvin cycle is

- A. Dependent on light
- B. Not dependent on light
- C. Occurs in light
- D. None of the above

Answer: B

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175. How many Calvin cycle form one hexose molecule

- A. 2
- B. 6

C. 4

D. 8

Answer: B



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176. CO_2 acceptor in C_3 plants is

A. Xylulose-5-phosphate

B. 3-phosphoglyceric acid

C. Ribulose 1,5-diphosphate

D. Phosphoneol pyruvic

Answer: C



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177. Which of the following is present in Calvin Cycle.

- A. Photophosphorylation
- B. Oxidative carboxylation
- C. Reductive carboxylation
- D. Oxidative phosphoroylation

Answer: C

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178. In C_3 plants, photosynthesis occur in

- A. Bundles sheath cells
- B. Peroxisome
- C. Mesophyll cells
- D. Kranz anatomy

Answer: C

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179. In which plant Calvin experiment by radio active isotopy to discover the stable product of C_3 cycle

- A. Chlorella
- B. Cyca
- C. Carrot
- D. Tabacco

Answer: A

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180. Radioactive C^{14} is given to CO_2 and released to atmosphere. This CO_2 is taken by RuBP in a C_3 plant. First radioactive C^{14} is seen in which compound

- A. PGAL
- B. PEP
- C. RMP
- D. PGA

Answer: D

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181. The first step in dark reaction of photosynthesis is

- A. Formation of ATP
- B. Ionization of water

C. Attachment of CO_2 to a pentose sugar

D. Excitement of electron of chlorophyll by a photon of light

Answer: C



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182. Which of the following is the first compound that accepts carbon dioxide during dark phase of photosynthesis

A. NADP

B. RuBP

C. Ferridoxin

D. Cytochrome

Answer: B



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183. Number of carboxylation occur in Calvin cycle is

A. 0

B. 1

C. 2

D. 3

Answer: B



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184. Reducing power which is transferred from light reaction of photosynthesis to the dark reaction is

A. ATP

B. NADPH

C. NADH

D. $FADH_2$

Answer: B



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185. The family in which many plants are C_4 type

A. Malvaceae

B. Solanaceae

C. Cruciferae

D. Gramineae

Answer: D



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186. Which of the following statements with regards to photosynthesis is/are correct

(A) In C_4 plants, the primary CO_2 acceptor is PEP

(B) In the photosynthetic process PS II absorbs energy at or just below 680nm

(C) The pigment that is present in the pigment system I is P_{683}

A. B and C only

B. A only

C. C only

D. A and B only

Answer: D



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187. The C_4 plants are photosynthesis more efficient than C_3 plant because

- A. The CO_2 efflux is not prevented
- B. They have more chloroplasts
- C. The CO_3 compensation point is more
- D. CO_3 generated during photorespiration is trapped and recycled through PEP carboxylase

Answer: B

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188. In C_4 plants, the bundle sheath cells

- A. Having thin walls of facilitate the gaseous exchange
- B. Have large intercellular spaces

C. Are rich in PEP carboxylase

D. Having a high of chloroplasts and rich in RuBisCo

Answer: B



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189. The ratio between 2-carbon and 3-carbon intermediates having- NH_2 group formed in photosynthetic oxidation cycle is

A. 1: 1

B. 2: 1

C. 3: 2

D. 3: 4

Answer: D



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190. The first carbon fixation in C_4 pathway occurs in chloroplasts of

- A. Guards cells
- B. Mesophyll cells
- C. Bundle sheath cells
- D. Epidermal cells

Answer: B



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191. An alternate CO_2 fixation mechanism was found in some tropical species of grass family by Hatch and Slack, who were from

- A. England
- B. USA

C. Australia

D. New Zealand

Answer: B



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192. In a CAM plant the concentration of organic acid

A. Increase during the day

B. Decrease or increases during the day

C. Increases during night

D. Decreases during any time

Answer: C



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193. In photorespiration, what is the role of peroxisome

- A. Help in oxidation of glycolate
- B. Help in oxygenation of glycolate
- C. Help in synthesis of PGA
- D. Help in reduction of gly oxycolate

Answer: C



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194. During photorespiration, the oxygen consuming reaction (s) occur in

- A. Gramma of chloroplasts and peroxisomes
- B. Stroma of chloroplasts
- C. Stroma of chloroplasts and mitochondria

D. Stroma of chloroplasts and peroxisomes

Answer: A

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195. The energy wastage occurs during

A. Dark respiration

B. Photosynthesis

C. Glycolysis

D. Photorespiration

Answer: D

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196.are CAM plant

- A. Maize, papaya
- B. Pineapple, agave
- C. Onion, mango
- D. Pea, sugarcane

Answer: D



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197. Which one is a C_4 plant

- A. Sorghum
- B. Tribulus
- C. Maize
- D. All of these

Answer: B

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198. Photorespiration shows formation of

- A. Sugar but not ATP
- B. ATP but not sugar
- C. Both ATP and sugar
- D. Neither ATP nor sugar

Answer: D

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199. In C_4 plants, Calvin cycle occurs in

- A. Stroma of bundle sheath chloroplast
- B. Mesophyll chloroplast
- C. Grana of bundle sheath chloroplast
- D. Does not occur as CO_2 is fixed mainly by PEP and no CO_2 is left for Calvin Cycle

Answer: D

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200. Photorespiration is characteristic of

- A. CAM plants
- B. C_3 plants
- C. C_4 plants
- D. None of the above

Answer: A



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201. C_4 photosynthesis does not occur in

- A. Zea mays
- B. Saccharum munja
- C. Saccharum officinarum
- D. Euphorbia splendens

Answer: B



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202. Which of the following is CO_2 acceptor in C_4 plants

- A. Phosphoenol pyruvate (PEP)
- B. Ribulose 1,5-diphosphate (RuDP)
- C. Oxaloacetic acid (OAA)
- D. Phosphoglyceric acid

Answer: D

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203. Which of the following cycle shows oxaloacetic acid as first stable product

- A. Calvi cycle
- B. Hatch and Slack cycle (C_4)
- C. C_2 cycle
- D. None of the above

Answer: A



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204. Kranze type of anatomy is found in

- A. C_2 plants
- B. C_3 plants
- C. C_4 plants (sugarcaene)
- D. CAM plants

Answer: B



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205. During photorespiration, which compounds are formed having 2C and 3C respectively in Perxisome

- A. Glycolate, Glycine
- B. Glycine, Glycerate
- C. Serine, Glycine
- D. Phosphoglycerate, Glycolate

Answer: C

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206. C_4 plants are adapted to

- A. Hot and dry climate
- B. Temperature climate
- C. Cold and dry climate
- D. Hot and humid climate

Answer: B

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207. Which one of the following is wrong in relation to photorespiration

- A. It is a characteristic of C_3 plants
- B. It occurs in chloroplasts
- C. It occurs in chloroplasts
- D. It is a characteristic of C_4 plants

Answer: A

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208. A plant in your garden avoids photorespiratory losses, has improved water use efficiency shows high rates of photosynthesis at high temperatures and has improved efficiency of nitrogen

utilisation. In which of the following physiological groups would you assign this plant

A. C_3

B. C_4

C. CAM

D. Nitrogen fixer

Answer: D



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209. Which one of the following is a CAM plant

A. Maize

B. Kalanchose

C. Sugarcane

D. Jower

Answer: B

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210. Select the incorrect matched pair with regard to C_4 cycle

(a)	Primary CO_2 fixation product	-	PGA
(b)	Site of initial carboxylation	-	Mesophyll cells
(c)	Primary CO_2 acceptor	-	PEP
(d)	C_4 plant	-	Maize
(e)	Location of enzyme <i>RuBisCO</i>	-	Bundle sheath cells

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211. CAM helps the plants in

A. Reproduction

- B. Conserving water
- C. Secondary growth
- D. Disease resistance

Answer: A



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212. Atriple chloroplasts occur in certain

Or

Atriplex spongiosa is a

- A. Succulents
- B. C_4 plants
- C. Hydrophytes
- D. C_3 plants

Answer: B

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213. In the leaves of C_4 plants, malic acid formation during CO_2 fixation occurs in the cells of

- A. Mesophyll
- B. Bundle Sheath
- C. Phloem
- D. Epidermls

Answer: B

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214. Which of the following plants stand intermediate between C_3 and C_4 plants

- A. Triticum aestivum
- B. Zea mays
- C. Panicum millodes
- D. All of these

Answer: A

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215. Chloroplasts without grana are known to occur in

- A. Bundle sheath cells of C_3 plants
- B. Mesophyll cell of C_4 plants
- C. Bundle sheath cells of C_4 plants

D. Mesophyll cell of all plants

Answer: C

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216. which crop utilises solar energy most efficiently

A. Patato

B. Sugarcane

C. Wheat

D. Rice

Answer: B

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217. In maximum plants stomata open during day and closed in night.

Its exception is

- A. Crassulacean acid metabolism plants
- B. C_3 plants
- C. C_4 plants
- D. None of the above

Answer: A

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218. Correlation between 'Kranz' anatomy and C_4 path of CO_2 assimilation was first established by

- A. Hill and Bendall
- B. Calvin

C. Downton and Treguna

D. Arnold

Answer: C



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219. The glycolate metabolisam occur in

A. Lysosomes

B. Ribosomes

C. Glyoxysomes

D. Peroxisomes

Answer: D



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220. Members of family Crassulaceae perform

- A. C_3 photosynthesis
- B. CAM photosynthesis
- C. C_4 photosynthesis
- D. All of the above

Answer: B

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221. In Kranz anatomy, the bundle sheath cells have

- A. Thin walls, no intercellular spaces and several chloroplasts
- B. Thick walls, many intercellular spaces and few chloroplasts
- C. Thin walls, many intercellular spaces and no chloroplasts

D. Thick walls, no photosynthesis during day in CAM plant is chloroplasts

Answer: D



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222. Source of CO_2 for photosynthesis during day in CAM plant is

- A. 3-PGA
- B. Malic acid
- C. Oxalo-acetic acid
- D. Pyruvate

Answer: B



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223. Which of the following is a 4-carbon compound

- A. Oxaloacetic acid
- B. Phosphoglyceric acid
- C. Ribulose bis phosphate
- D. Phosphoenol pyruvate

Answer: A



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224. Sugarcane show high efficiency of CO_2 fixation because of

- A. Calvin cycle
- B. Hatch and Slack cycle
- C. TCA cycle
- D. Greater sunlight

Answer: B



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225. In C_4 -plants, the carbon dioxide fixation occurs in

- A. Guard cells
- B. Spongy cells
- C. Palisade cells
- D. Bundle sheath cells

Answer: D



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226. Photorepiration is favoured by

- A. Low light and high O_2
- B. Low O_2 and high CO_2
- C. Low temperature and high O_2
- D. High O_2 and low CO_2

Answer: D

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227. Photosynthesis in C_4 plants is relatively less limited by atmospheric CO_2 levels because

- A. Four carbon acids are the primary initial CO_2 fixation products
- B. The primary fixation of CO_2 is mediated via PEP carboxylase
- 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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228. Which of the following statements regarding C_4 pathway is false

- A. The primary CO_2 acceptor is 5 carbon molecule
- B. The enzyme responsible for CO_2 fixation is PEP case
- C. The mesophyll cell lack RuBis Co enzyme
- D. The C_4 acid OAA is formed in the mesophyll cells

Answer: A



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229. CAM photosynthesis occurs in plants with

A. Thin green leaves with reticulate venation

B. Thin green leaves with parallel venation

C. Fleshy green leaves

D. Thin coloured leaves

Answer: C

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230. C_4 plant shows efficiency even in

A. Low CO_2 concentration

B. Low temperature

C. High O_2 concentration

D. At low water

Answer: A

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231. In sugarcane plant $^{14}CO_2$ is fixed in malic acid, in which the enzyme that fixes CO_2 is

- A. Fructose phosphatase
- B. Ribulose biphosphate carboxylase
- C. Phosphoenol pyruvic acid carboxylase
- D. Ribulose phosphate kinase

Answer: C

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232. A process that makes important difference between C_3 and C_4 plants is

- A. Transpiration
- B. Glycolysis
- C. Photosynthesis
- D. Photorespiration

Answer: D

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233. Which of the statements is not true of the C_4 pathway

- A. It requires more energy than the C_3 pathway for production of glucose
- B. It overcomes loss due to photorespiration
- C. The CO_2 acceptor is a C_3 compound
- D. It is inhibited by high CO_2 concentration

Answer: C

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234. Photorespiration is called

- A. C_2 cycle
- B. C_3 cycle
- C. C_4 cycle
- D. None of these

Answer: A

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235. The first reaction in photorespiration is

- A. Carboxylation
- B. Decarboxylation
- C. oxygenation
- D. Phosphorylation

Answer: C

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236. In photorespiration glycolate is converted to CO_2 and serine in

- A. Chloroplasts
- B. Peroxisomes
- C. Vacuoles
- D. Mitochondria

Answer: D

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237. No. of carboxylation in C_4 cycle is/are

A. 1

B. 2

C. 5

D. 3

Answer: B

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238. In Hatch and Slack pathway

A. Chloroplast are of same type

- B. Occurs in Kranz anatomy where mesophyll have small chloroplast whereas bundle sheath have agranal chloroplast
- C. Occurs in Kranz anatomy when mesophyll have small chloroplast where a bundle sheath have larger chloroplast
- D. Kranz anatomy where mesophyll cell are diffused

Answer: B



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239. The enzyme which catalyzes the photosynthetic C_4 cycle is

- A. RuDP carboxylase
- B. PEP carboxylase
- C. Carbonic anhydrase
- D. None of these

Answer: B



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240. Peroxisomes are found in

- A. Bundle sheath
- B. Endosperm
- C. Mesophyll cells
- D. Vascular bundle

Answer: C



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241. Peroxisomes are related with

- A. Photosynthesis
- B. Photorespiration
- C. Respiration
- D. None

Answer: B

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242. Photorespiration take place is

- A. Chloroplast, mitochondria
- B. Mitochondria, peroxysome
- C. Chloroplasts, peroxysome, mitochondria
- D. Chloroplasts, cytoplasm, mitochondria

Answer: C

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243. Which one is false about kranz anatomy

- A. Bundle sheath have large chloroplast and less developed grana
- B. Mesophyll cells have large chloroplast and more
- C. It is found in Atriplex, sugarcane, maize
- D. Plant having it have better photosynthesizing power than C_3 plants

Answer: B

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244. The entire reactions of C_4 pathway takes place in

- A. Mesophyll and bundle sheath

- B. Vascular bundle and palisade tissue
- C. Mitochondria and peroxisome
- D. Bundle sheath and endoplasmic reticulum

Answer: A

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245. Bacteria that uses chemical energy to fix CO_2 are known as

- A. Chemoautotroph
- B. Photoautotroph
- C. Heterotroph
- D. None of these

Answer: A

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246. All life on earth derive its energy directly or indirectly from sun except

- A. Mushroom and mould
- B. Chemosynthetic bacteria
- C. Symbiotic bacteria
- D. Pathogenic bacteria

Answer: B

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247. Which one of the following categories of organisms do not evolve oxygen during Photosynthesis

- A. Red algae

- B. Photosynthetic bacteria
- C. C_4 plants with Kranz anatomy
- D. Blue green algae

Answer: B

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248. The site of photosynthesis in blue green algae is

- A. Chromatophores
- B. Mitochondria,
- C. Chloroplast
- D. Root hair

Answer: A

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249. In the bacterial photosynthesis, hydrogen donor is

- A. H_2S
- B. NH_2
- C. H_2O
- D. H_2SO_4

Answer: A

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250. Which wavelength of light carry out photosynthesis in bacteria

- A. Ultraviolet light
- B. Blue
- C. Red

D. Far red

Answer: D

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251. Leptothrix is a

- A. Nitrifying bacteria
- B. Sulphur bacteria
- C. Iron bacteria
- D. Hydrogen bacteria

Answer: C

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252. Green bacteria contains

- A. Chlorobium chlorophyll-660
- B. Chlorobium chlorophyll-650
- C. Both (a) and (b)
- D. Chlorobium chlorophyll-700

Answer: C



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253. Bacterial photosynthesis takes place in

- A. Cytoplasm
- B. Chromoplast
- C. Chloroplast
- D. Oxysome

Answer: A

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254. Chlorophyll a is absent in which of the following photosynthetic organism

- A. Cyanobacteria
- B. Red algae
- C. Brown algae
- D. Bacteria

Answer: D

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255. Which of the following bacteria grow on isopropyl alcohol and convert it into acetone

- A. Fermentative bacteria
- B. Chemosynthesis bacteria
- C. Photosynthetic purple non-sulphur bacteria
- D. Nitrifying bacteria

Answer: C



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256. Bacterial photosynthesis involves.....

- A. Both PS-I and PS-II
- B. Either PS-I or PS-II
- C. PS-I only

D. PS-II only

Answer: C

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257. Which of the following photosynthesis bacteria have both PS-I and PS-II

Or

Which was first photosynthesis organism

- A. Green sulphur bacteria
- B. Purple sulphur bacteria
- C. Cyanobacteria
- D. Purple non-sulphur bacteria

Answer: C

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258. Which of the following inhibits O_2 release in light phase

- A. PMA
- B. zeatin
- C. DCMU
- D. None of these

Answer: C



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259. Which factor is not limiting in normal conditions for photosynthesis

- A. Air
- B. CO_2

C. water

D. chlorophyll

Answer: D



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260. Blackman's law of limiting factor is applied to

A. Growth

B. Respiration

C. Transpiration

D. Photosynthesis

Answer: D



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261. The algae found in high temperature ponds are capable of photosynthesis upto

- A. 30°C
- B. 75°C
- C. 90°C
- D. 100°C

Answer: B



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262. What is called Warburg's effect on photosynthesis

- A. Low rate of the process due to O_2 supply
- B. Low rate of the process due to CO_2 supply
- C. Both (a) and (b)

D. None of these

Answer: A

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263. When $NaHCO_3$ is added in small quantity in an experiment showing photosynthesis, What will be the effect on it

- A. Rate will be lowered
- B. Rate will be increased
- C. Rate will be normal
- D. Process will stop

Answer: B

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264. The most effective wavelength of visible light in photosynthesis is in the region of

- A. Violet
- B. Green
- C. Violet
- D. Red

Answer: D



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265. Compensation point is

- A. Where there is neither photosynthesis nor respiration
- B. When rate of photosynthesis is equal to the rate of respiration
- C. When entire food synthesis into photosynthesis remain utilized

D. When there is enough water just to meet the requirement of
plant

Answer: B



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266. Which one of the following one of the following is not a limiting factor for photosynthesis

A. Oxygen

B. Carbon dioxide

C. Chlorophyll

D. Light

Answer: A



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267. If the rate of translocation of food is slow, what will be the effect on photosynthesis

- A. It will increase
- B. It will remain same
- C. Becomes double
- D. It will decrease

Answer: D

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268. Which of the following wavelength of light is absorbed maximum for photosynthesis

or

Chl. A absorb's max of

- A. Red light
- B. Blue light
- C. Green light
- D. Yellow light

Answer: B

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269. In which of the following the rate of photosynthesis is decreased and is known as red drop

- A. Blue light
- B. Green light
- C. Red light more than 680 nm
- D. Red light less than 680 nm

Answer: C



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270. Q_{10} refers to

- A. Quality quotient
- B. Temperature quationt
- C. Respiratory quotient
- D. quantum constant

Answer: B



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271. A plant is kept in 300ppm CO_2 concentration, what will happen to it

- A. Planet will die soon
- B. Plant will grow but will not die
- C. Planet will show normal photosynthesis
- D. Respiration will be greatly decreased

Answer: C

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272. What will be the effect of intermittent light on photosynthesis

- A. It will increase
- B. it will decrease
- C. Will not affected
- D. Process will stop

Answer: A

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273. Which will be the effect when very high intensity of light is supplied to a photosynthesis system

- A. Process will increase
- B. Process will decrease
- C. Process will stop due to solarization
- D. None of these

Answer: C

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274. Which of the following conditions are favourable for cyclic photophosphorylation

- A. Anaerobic condition
- B. Aerobic and optimum light
- C. Aerobic and low light intensity
- D. Anaerobic and low light intensity

Answer: D

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275. Plants which can photosynthesize at as low temperature (upto -35°C) are

- A. Conifers
- B. Blue green algae
- C. Xerophytes
- D. Tropical planets

Answer: A



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276. When a photosynthetic plant is transferred to an atmosphere of enriched O_2 , its rate of

- A. Photosynthesis would increase
- B. Photosynthesis would decrease
- C. Respiration would decrease
- D. Osmosis would increase

Answer: B



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277. Under conditions of constant illumination, The compensation period for a whole aquarium would be infinite length when

- A. The biomass of animals equals the biomass of plants
- B. The respiratory exchanges of the animals are equal to the photosynthetic exchanges of the plants
- C. The oxygen intake of the animals equals of oxygen output of photosynthesis
- D. The carbon dioxide output of the animals and plants equals to the photosynthetic intake of the plants

Answer: D



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278. In mature the photosynthesis should proceed upto the limit of

A. Light

B. Temperature

C. CO_2

D. Moisture and wind

Answer: B



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279. Which of the following would happen if the supply of O_2 is decreased to an illuminated wheat plant

A. Its photosynthesis would decrease

B. Its respiration would increase

C. Its photosynthesis would increase

D. All the physiological process will stop

Answer: C



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280. With reference to factors affecting the rate of photosynthesis, which of the following statements is not correct ?

- A. Light saturation for CO_2 fixation occurs at 10% of full sunlight
- B. Increasing atmospheric CO_2 concentration up to 0.05% can enhance CO_2 fixation rate
- C. C_3 plants respond to higher temperature with enhanced photosynthesis while C_4 plants have much lower temperature optimum
- D. Tomato is a greenhouse crop which can be grown in CO_2 enriched atmosphere for higher yield

Answer: C

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281. Which metal ion is a constituent of chlorophyll?

- A. Iron
- B. Copper
- C. Magnesium
- D. Zinc

Answer: C

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282. 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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283. Chemosynthetic bacteria obtain energy from

A. Sun

B. Infra red rays

C. Organic substance

D. Inorganic chemicals

Answer: D

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284. Energy required for ATP synthesis in PSII comes from

- A. Protein gradient
- B. Electron gradient
- C. Reduction of glucose
- D. Oxidation of glucose

Answer: A

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285. During light reaction in photosynthesis the following are formed.

- A. ATP and sugar
- B. Hydrogen, O_2 and sugar

C. ATP, hydrogen donor and O_2

D. ATP, hydrogen and O_2 donor

Answer: C



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286. Dark reaction in photosynthesis is called so because

A. It can occur in dark also

B. It does not depend on light energy

C. It cannot occur during day light

D. It occur more rapidly at night

Answer: A



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287. When CO_2 is added to PEP. The first stable product synthesised is

- A. Pyruvate
- B. Glyceraldehyde-3-phosphate
- C. Phosphoglycerate
- D. Oxaloacetate

Answer: D



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288. Splitting of water is associated with

- A. Photosystem I
- B. Lumen of thylakoids
- C. Both Photosystem I and II

D. Inner surface of thylakoid membrane

Answer: D

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289. The correct sequence of flow of electrons in the light reaction is

- A. PSII, plastoquinone, cytochromes, PSI, ferredoxin
- B. PSI, plastoquinone, cytochromes, PSII, ferredoxin
- C. PSI, ferredoxin, PSII
- D. PSI, plastoquinone, cytochromes, PSII, ferredoxin

Answer: A

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290. The enzyme that is not found in a C_3 plant is

- A. RuBP Carboxylase
- B. PEP Carboxylase
- C. NADP reductase
- D. ATP synthase

Answer: B



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291. The reaction that is responsible for the primary fixation of CO_2 is catalysed by

- A. RuBP Carboxylase
- B. PEP Carboxylase
- C. RuBP Carboxylase and PEP Carboxylase

D. PGA synthase

Answer: C

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292. Which is the evidence to show that O_2 is released in photosynthesis comes from water

- A. Isotopic O_2 supplied as H_2O appears in the O_2 released in photosynthesis
- B. Isolated chloroplast in water releases O_2 if supplied potassium ferrocyanide or some other reducing agent
- C. Photosynthetic bacteria use H_2S and CO_2 to make carbohydrates
- D. All of the above

Answer: D



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293. What effect would occur on photosynthesis, if the amount of oxygen in the atmospheric decreases

- A. Increases in C_3 cycle and decrease in C_4 cycle
- B. Increases in C_4 cycle and decrease in C_3 cycle
- C. Increases in C_3 cycle and no changes in C_4 cycle
- D. Increases in C_4 cycle and no change in C_3 cycle

Answer: C



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294. Read the following four statements (A-D)

(A) Both, photophosphorylation and oxidative phosphorylation involve up hill transport of protons across the membrane

(B) In dicot stems, a new cambium originates from the cells of pericycle at the time of secondary growth

(C) Stamens in flowers of *Gloriosa* and *Petunia* are polyandrous

Symbiotic nitrogen-fixers occur in the free-living state also in soil

How many of the above statements are right

A. Two

B. Three

C. Four

D. One

Answer: A



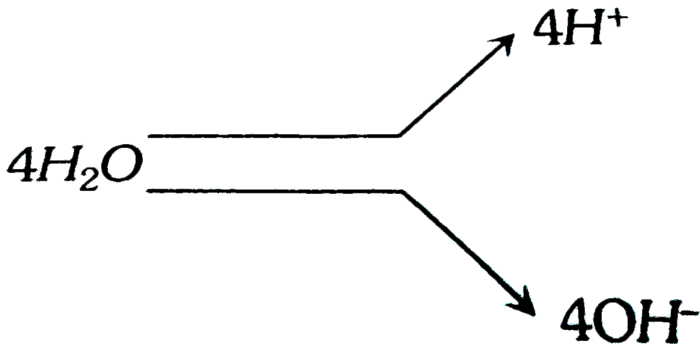
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295. Which of the following may show photosynthesis in moonlight

- A. Some thermal algae
- B. Some marine algae
- C. Some fresh water algae
- D. None of these

Answer: B

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296.

In this process which of the following play important role

A. Chlorophyll a

B. Light energy

C. Ca^{++} , Mn^{++} , Cl^{-}

D. All of the above

Answer: D

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297. Chloroplast contains maximum quantity of

A. Pyruvic carboxylase

B. Hexokinase

C. RuBP carboxylases

D. None of these

Answer: C



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298. What is common between photosynthesis and respiration

A. Cytochrome

B. Light energy

C. H_2O

D. Temperature

Answer: A



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299. Photosynthesis is

A. Oxidative ,exergonic, catabolic

B. Reductive,endergonic,anabolic

C. Reductive,exergonic,anabolic

D. Reductive,endergonic,catabolic

Answer: B



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300. Which of the following can photosynthesis at low temperature (– 20° C)

A. Bacteria

B. Lichen

C. Yeast

D. Batrachospermum

Answer: B



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301. The electron transport chain of photosynthetic process is

- A. In the stroma of the chloroplast
- B. Bound to the thylakoid membranes
- C. Present in the outer membrane of the chloroplast
- D. Present in mitochondria

Answer: B



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302. What percentage of usable radiant energy entering a reaction site of photosynthesis is converted to potential energy

- A. 0.1
- B. 0.2

C. 0.35

D. 0.42

Answer: C



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303. Chlorophyll 'a' is found in

A. All oxygen releasing photosynthetic forms

B. All plants except fungi

C. All higher plants that photosynthesize

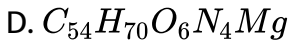
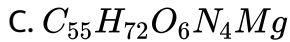
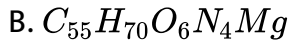
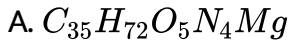
D. All photosynthetic prokaryotes and eukaryotes

Answer: A



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304. The empirical formula for chlorophyll *a* is



Answer: C



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305. Which of the following is wrongly matched

- (a) Sorghum – Kranz anatomy
- (b) PEP carboxylates – Mesophyll cell
- (c) Blackman – Law of limiting factors
- (d) Photorespiration – C_3 plants
- (e) *PSII* – *P700*

A. A

B. B

C. E

D. C

Answer: C

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306. Chlorophyll 'a' molecule at its carbon atom 3 of the pyrrole ring II has one of the following

A. Aldehyde group

B. Methyl group

C. Carboxylic group

D. Magnesium

Answer: B

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307. Bacteriochlorophyll differs from chlorophyll *a* in having

- A. One pyrrole ring with one hydrogen
- B. One pyrrole ring with two hydrogens
- C. One pyrrole ring with three hydrogens
- D. One pyrrole ring with four hydrogens

Answer: B

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308. In photosynthesis, photolysis of water is used in

- A. Reduction Of NADP
- B. Oxidation of NADP

C. Oxidation of FAD

D. None of these

Answer: A



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309. C_4 plants are found among

A. Gramineae only

B. Monocots only

C. Dicots only

D. Monocotes as well as dicots

Answer: D



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310. Energy transfer in photosynthesis occurs as

A.

Phycoerythrin → Phycocyanin → Carotenoid → Chlorophyll a

B.

Chlorophyll b → Carotenoid → Phycoerythrin → Chlorophyll a

C.

Phycocyanin → Phycoerythrin → Carotenoid → Chlorophyll a

D.

Chlorophyll → Carotenoid → Phycocyanin → Chlorophyll a

Answer: C



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311. Photosynthesis consists of essentially two biological reaction systems, One followed by the other, One followed by the other, the second of these systems does which of the following

- A. Fixes CO_2
- B. Traps light energy
- C. Synthesizes starch
- D. Works only in the presence of light

Answer: A

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312. During reaction for fixation of carbon, the three carbon atoms of each molecule of 3-phosphoglyceric acid (PGA) are derived from

- A. RuBP only

B. CO_2 only

C. RuBp+ CO_2

D. $RuBP + CO_2 + PEP$

Answer: C

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313. Calvin's cycle is found in

A. Only C_3 plants

B. Only photophilous plants

C. All C_4 plants

D. All photosynthetic plants

Answer: D

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314. the first intermediate formed during photosynthesis is

- A. Fructose 1, 6- diphosphate
- B. Ribulose 1, 5-biphosphate
- C. Xylulose-5-phosphate
- D. Phosphoglyceraldehyde

Answer: D

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315. First transitory chemical formed by reaction between CO_2 and RuBP is

- A. PGAL / GAP
- B. 2-Carboxy, 3-keto, 1-5-biohospho ribotol

C. PGA

D. Dihydroxy acetone phosphate

Answer: B



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316. As compared to a C_3 plant, how many additional molecules of ATP are needed for net production of one molecule hexose sugar by C_4 plants

A. Two

B. Six

C. Zero

D. Twelve

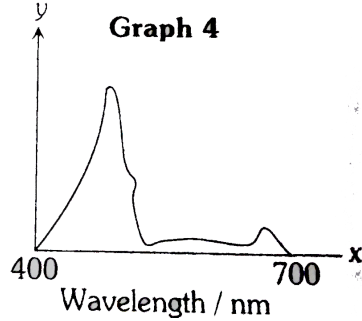
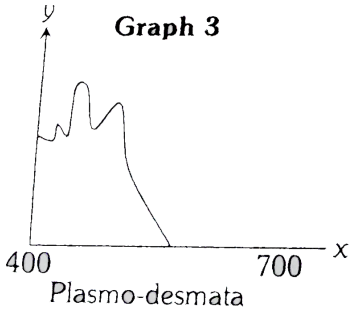
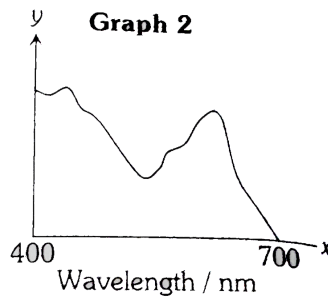
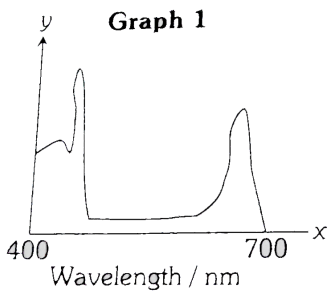
Answer: D



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317. Three of the graphs below show the absorption spectra of photosynthetic pigments. One graph shows the action spectrum of photosynthesis for a plant containing the pigments.

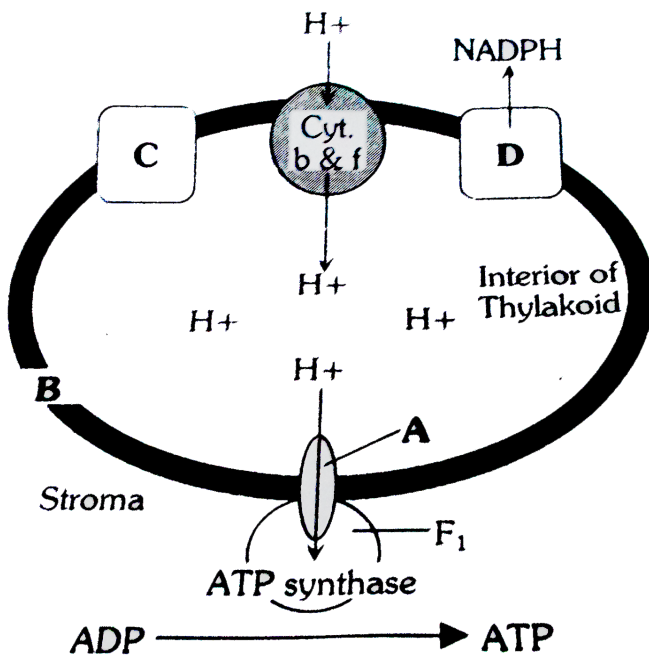
All the x axis show wavelength. Three of the y axis show light absorption. One y axis shows the rate of photosynthesis



	<i>Chlorophyll a</i>	<i>Absorption Chlorophyll b</i>	<i>Spectra Carotenoids</i>	<i>Action spectrum</i>
(a)	3	2	4	1
(b)	2	4	3	1
(c)	2	1	3	4
(d)	1	4	3	2

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318. Observe the pathway of ATP synthesis through chemiosmosis given below



Select the right answer in which correct words for all the four blanks A,B,C and D are indicated

A. A- F_0 ,B-Thylakoid membrane, C-Photosystem (II),D-Photosystem

(I)

B. A- F_1 ,B-Thylakoid membrane, C-Photosystem (II),D-Photosystem

(I)

C. A- F_0 ,B-Thylakoid membrane, C-Photosystem (I),D-Photosystem

(II)

D. A- F_1 ,B-Thylakoid membrane, C-Photosystem (I),D-Photosystem

(II)

Answer: A



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319. Chromatophores take part in

A. Growth

B. Movement

C. Respiration

D. Photosynthesis

Answer: D



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320. In a chloroplast the highest number of protons are found in

- A. Stroma
- B. Lumen of thylakoids
- C. Inter membrane space
- D. Antennae complex

Answer: B



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321. Photosynthesis cannot be operated in

- A. Red light
- B. Yellow light
- C. Green light
- D. Blue light

Answer: C

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322. Assertion: C_4 pathway of CO_2 fixation is found in some tropical plants.

Reason : In this pathway CO_2 is fixed by 3C compound.

- A. If both the assertion and the reason are true and the reason is a correct explanation of the assertion
- B. If both the assertion and reason is not a correct explanation of the assertion
- C. If the assertion is true but the reason is false
- D. If both the assertion and reason are false

Answer: B

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323. Assertion : Six molecules of CO_2 and twelve molecules of $NADPH + H^+$ and 18 ATP are used to form one hexose molecule.

Reason : Light reaction result in formation of ATP and $NADPH_2$

- A. If both the assertion and the reason are true and the reason is a correct explanation of the assertion
- B. If both the assertion and reason is not a correct explanation of the assertion
- C. If the assertion is true but the reason is false
- D. If both the assertion and reason are false

Answer: B

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324. Assertion : Rhoeo leaves contain anthocyanin pigments in epidermal cells.

Reason : Anthocyanins are accessory photosynthetic pigments.

- A. If both the assertion and the reason are true and the reason is a correct explanation of the assertion
- B. If both the assertion and reason is not a correct explanation of the assertion
- C. If the assertion is true but the reason is false
- D. If both the assertion and reason are false

Answer: C



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325. Assertion : There is a decrease in photosynthesis, if the photosynthetic cells are illuminated by light of P_{680} nm or more wavelength.

Reason : In red drop phenomenon the rate of photosynthesis decreases.

- A. If both the assertion and the reason are true and the reason is a correct explanation of the assertion
- B. If both the assertion and reason is not a correct explanation of the assertion
- C. If the assertion is true but the reason is false
- D. If both the assertion and reason are false

Answer: B

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326. Assertion : The concentration of O_2 in atmosphere is inhibitory to photosynthesis.

Reason : Oxygen inhibitory effect is due to Warburg effect.

- A. If both the assertion and the reason are true and the reason is a correct explanation of the assertion
- B. If both the assertion and reason is not a correct explanation of the assertion
- C. If the assertion is true but the reason is false
- D. If both the assertion and reason are false

Answer: A

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327. Assertion: C_4 photosynthetic pathway is more efficient than the C_3 pathway.

Reason : Photorespiration is suppressed in C_4 plants.

- A. If both the assertion and the reason are true and the reason is a correct explanation of the assertion
- B. If both the assertion and reason is not a correct explanation of the assertion
- C. If the assertion is true but the reason is false
- D. If both the assertion and reason are false

Answer: A



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328. Assertion : CAM plants lack structural compartmentation of leaf, as found in C_4 plant

Reason : Stomata of CAM plants are open during the day.

- A. If both the assertion and the reason are true and the reason is a correct explanation of the assertion
- B. If both the assertion and reason is not a correct explanation of the assertion
- C. If the assertion is true but the reason is false
- D. If both the assertion and reason are false

Answer: C

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329. Assertion : Plants utilizing first RuBP in CO_2 fixations are called C_3 plants.

Reason : plants utilizing first PEP in CO_2 fixations are called C_4 plants.

- A. If both the assertion and the reason are true and the reason is a correct explanation of the assertion
- B. If both the assertion and reason is not a correct explanation of the assertion
- C. If the assertion is true but the reason is false
- D. If both the assertion and reason are false

Answer: B



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330. Assertion : Cyclic pathway of photosynthesis first appeared in some eubacterial species.

Reason Oxygen started accumulating in the atmosphere after the non-cyclic pathway of photosynthesis evolved.

- A. If both the assertion and the reason are true and the reason is a correct explanation of the assertion
- B. If both the assertion and reason is not a correct explanation of the assertion
- C. If the assertion is true but the reason is false
- D. If both the assertion and reason are false

Answer: B



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331. Assertion : The stromal thylakoids are rich in both PS I and PS II

Rason : The granal membranes are rich in ATP synthetase.

- A. If both the assertion and the reason are true and the reason is a correct explanation of the assertion

- B. If both the assertion and reason is not a correct explanation of the assertion
- C. If the assertion is true but the reason is false
- D. If both the assertion and reason are false

Answer: D

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332. Assertion : Cycle photophosphorylation synthesizes ATP.

Reason : ATP synthesise in cyclic photophosphorylation is not associated with NADPH formation.

- A. If both the assertion and the reason are true and the reason is a correct explanation of the assertion
- B. If both the assertion and reason is not a correct explanation of the assertion

C. If the assertion is true but the reason is false

D. If both the assertion and reason are false

Answer: B



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333. Assertion : Oxidative phosphorylation requires oxygen.

Reason : Oxidative photophosphorylation occurs in mtiochondria.

A. If both the assertion and the reason are true and the reason is a correct explanation of the assertion

B. If both the assertion and reasons are true but reason is not a correct explanation of the assertion

C. If the assertion is true but the reason is false

D. If both the assertion and reason are false

Answer: B

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334. Assertion : Each molecule of ribulose-1,5 biphosphate fixes one molecule of CO_2

Reason : Three molecules of NADPH and two ATP are required for fixation of one molecule of CO_2

- A. If both the assertion and the reason are true and the reason is a correct explanation of the assertion
- B. If both the assertion and reason s not a correct explanation of the assertion
- C. If the assertion is true but the reason is false
- D. If both the assertion and reason are false

Answer: C

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335. Assertion : CO_2 is transported from mesophyll cell to bundle sheath of chloroplasts in C_4 plants.

Reason : RbBP is called final acceptor of CO_2 in C_4 plants.

- A. If both the assertion and the reason are true and the reason is a correct explanation of the assertion
- B. If both the assertion and reason is not a correct explanation of the assertion
- C. If the assertion is true but the reason is false
- D. If the assertion is false but reason is true

Answer: E

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336. Assertion : One molecule of CO_2 is fixed to give 686 kcal in photosynthesis.

Reason : To form a glucose, six molecules of CO_2 are fixed.

- A. If both the assertion and the reason are true and the reason is a correct explanation of the assertion
- B. If both the assertion and reason is not a correct explanation of the assertion
- C. If the assertion is true but the reason is false
- D. If the assertion is false but reason is true

Answer: E

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337. Assertion : In the formation of one glucose, 686,000 calories energy are produced.

Reason : The energy is provided by a total of 12 NADPH and 18 ATP.

- A. If both the assertion and the reason are true and the reason is a correct explanation of the assertion
- B. If both the assertion and reason is not a correct explanation of the assertion
- C. If the assertion is true but the reason is false
- D. If both the assertion and reason are false

Answer: A



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338. Assertion : Sciophytes require higher light intensity than heliophytes.

Reason : Sciophytes grow below the canopy of trees.

- A. If both the assertion and the reason are true and the reason is a correct explanation of the assertion
- B. If both the assertion and reason is not a correct explanation of the assertion
- C. If the assertion is true but the reason is false
- D. If the assertion is false but reason is true

Answer: E

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339. Assertion : Plant utilize 5-10% of the absorbed water in photosynthesis.

Reason : Reduced leaf hydration decrease the photosynthesis.

- A. If both the assertion and the reason are true and the reason is a correct explanation of the assertion

- B. If both the assertion and reason is not a correct explanation of the assertion
- C. If the assertion is true but the reason is false
- D. If the assertion is false but reason is true

Answer: E

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