BIOLOGY

BOOKS - A2Z BIOLOGY (HINGLISH)

PHOTOSYNTHESIS IN HIGHER PLANTS

Section A Topicwise Questions Topic 1 Early Experiments And Site Of Photosynthesis

1. Which of the following experiments showed that CO_2 is essential for photosynthesis?

A. Half-leaf experiment

B. Variegated leaf experiment

C. Priestley's experiment

D. J. von Sachs' experiment

Answer: A

Watch Video Solution

2. In half-leaf experiment, a compound is used to absorb CO_2. This compound is

A. NaOH

B. KOH

C. NaCl

D. HCl

Answer: B

Watch Video Solution

3. The following hypothesis, "Plants restore to the air whatever breathing animals and burning candles remove" was given by

A. Joseph Priestley

B. Jan Ingenhousz

C. T. W. Engelmann

D. C. van Niel

Answer: A

Watch Video Solution

4. Which of the following scientist showed that it is only the green part of the plants that would release oxygen?

A. Joseph Priestley

B. Jan Ingenhousz

C. T. W. Engelmann

D. C. van Niel

Answer: B

Watch Video Solution

5. Who found that the green parts in plants is where glucose is made, and that the glucose is usually stored as starch?

A. Julius von Sachs

B. Cornelius van Niel

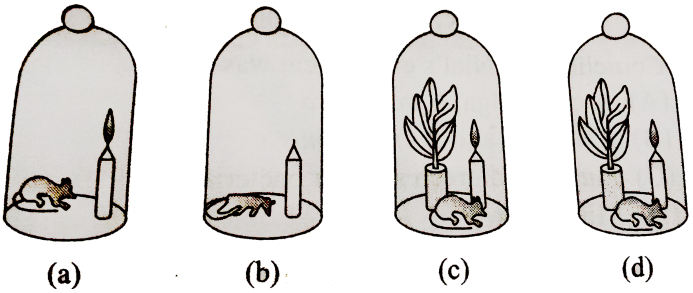
C. T.W. Engelmann

D. Jan Ingenhousz

Answer: A

Watch Video Solution

6. The following set up is called



A. Engelmann experiment

B. Jan Ingenhousz experiment

C. Priestley's experiment

D. Cornelius van Niel experiment

Answer: C

Watch Video Solution

7. Which scientist showed that the green substances in plant (chlorophyll) is located m special bodies (chloroplast) within plant cells?

A. Julius von Sachs

B. Cornelius van Niel

C. T. W. Engelmann

D. Jan Ingenhousz

Answer: A

Watch Video Solution

8. Action spectrum of photosynthesis was first studied by

A. Julius von Sachs

B. Cornelius van Niel

C. T.W. Engelmann

D. Jan Ingenhousz

Answer: C

Watch Video Solution

9. Action spectrum of photosynthesis resembles roughly the

A. Absorption spectrum of chlorophyll a

B. Absorption spectrum of chlorophyll b

C. Absorption spectrum of chlorophyll c

D. Absorption spectrum of chlorophyll a and b

Answer: A

Watch Video Solution

10. The empirical equation representing the total process of photosynthesis for oxygen evolving oxygen was given by

A. $6CO_2 + 12H_2O \xrightarrow{\text{Light}} C_6H_{12}O_6 + 6HO_2 + 6O_2$

B. $6CO_2 + 6H_2O \xrightarrow{\text{Light}} C_6H_{12}O_6 + 6O_2$

C. $CO_2 + H_2O \xrightarrow{\text{Light}} [CH_2O] + O_2$

D. $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$

Answer: C

Watch Video Solution

11. Recognise the figure and find out the correct matching.

A. a -grana, b-stromal lamella, e-ribosomes, c- starch granule, d-lipid droplet

B. b-grana, a-stromal lamella, c-ribosomes, d- starch granule, e-lipid droplet

C. a-grana, b-stromal lamella, d-ribosomes, e- starch granule, c-lipid droplet

D. b-grana, a-stromal lamella, d-ribosomes, c- starch granule, e-lipid droplet

Answer: A

View Text Solution

12. Cornelius van Niel's experiment was on

A. A green alga cladophora

B. Chlorella and Scenedesmus

C. Purple and green sulphur bacteria

D. Mint plant

Answer: C

Watch Video Solution

13. Engelmann's experiment was on

A. A green alga. Cladophora

B. Chlorella and Scenedesmus

C. Purple and green sulphur bacteria

D. Mint plant

Answer: A

Watch Video Solution

14. J. Priestley' s experiment was on

A. A green alga. Cladophora

B. Chlorella and Scenedesmus

C. Purple and green sulphur bacteria

D. Mint plant

Answer: D

Watch Video Solution

15. Who demonstrated that photosynthesis is essentially a light dependent reaction in which hydrogen from a suitable oxidisabie compound reduces carbon dioxide to carbohydrates·?

A. Julius von Sachs

B. Cornelius van Niel

C. T .W. Engelmann

D. Jan lngenhousz

Answer: B

Watch Video Solution

16. In purple and green sulphur bacteria, the hydrogen donor is

A. H_2S

B. H_2O

C. H_2SO_4

D. Sulphate

Answer: A

Watch Video Solution

17. The correct equation that would represent the overall process of photosyinthesis is

A. $6CO_2 + 12H_2O \rightarrow C_6H_{12}O_6 + 6HO_2 + 6O_2$

B. $6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$

C. $CO_2 + H_2O \rightarrow [CH_2O] + O_2$

D. $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$

Answer: A

Watch Video Solution

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

or

Which pigment is present universally in all green plants

A. Chlorophyll a

B. Chlorophyll b

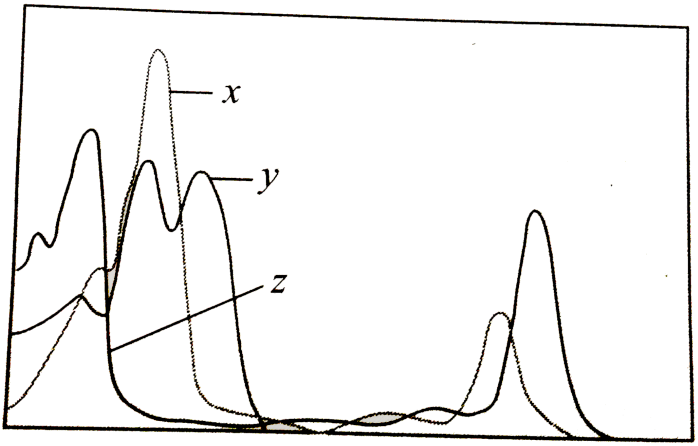
C. Chlorophyll c

D. Chlorophyll d

Answer: A

Watch Video Solution

19. Recognise the figure and find out the correct matching.



A. z-chlorophyll a, x-chlorophyll b, y--carotenoids

B. x-chlorophyll a, y--chlorophyll b, z--carotenoids

C. y-chlorophyll a, z-chlorophyll b, x--carotenoids

D. y-chlorophyll a, x-chlorophyll b, z--carotenoids

Answer: A

Watch Video Solution

20. Match the columns I and II, and choose the correct combination from the options given

	Column I		Column II
a.	Chlorophyll *a*	1.	Yellow
b.	Chlorophyll *b*	2.	Yellow green
c.	Carotenoids	3.	Yellow to yellow orange
d.	Xanthophylls	4.	Bright or blue green

A. 1-a, 3-b, 1-c, 2-d

B. 3-a, 4-b, 1-c, 2-d

C. 4-a, 2-b, 3-c, 1-d

D. 2-a, 1-b, 4---c, 3-d

Answer: C

Watch Video Solution

21. Leaf pigments of any green plants can be separated by

A. X-ray diffraction

B. Sedimentation

C. Paper chromatography

D. Centrifugation

Answer: C

View Text Solution

22. Joseph Priestley discovered O_2 in the year

A. 1860

B. 1854

C. 1774

D. 1770

Answer: C

Watch Video Solution

23. Photosynthesis is a

A. Physical process

B. Chemical process

C. Photo-chemical process

D. Physio-chemical process

Answer: C

Watch Video Solution

24. Photosynthesis is important and is the basis of life on earth because

A. Photosynthesis is the primary source of all food on earth

B. Photosyntesis is responsible for release of oxygen into the atmosphere

C. Both A and B

D. None of the above

Answer: C

Watch Video Solution

25. Which of the following are called accessory pigments?

(a) Chlorophyll a (b) Chlorophyll b

(c) Carotenoids (d) Xanthophylls

A. a, b and c

B. a,c and d

C. b, c and d

D. a, b, c and d

Answer: C

View Text Solution

26. Which one of the following does not play any role in photosynthesis

A. Phycocyanin

B. Phycnerythrin

C. Anthocyanin

D. Xanthophyll

Answer: C

Watch Video Solution

27. Besides water and light which is more essential as a raw material for food formation

A. CO_2

B. NAD

C. O_2

D. Mineral salts

Answer: A

Watch Video Solution

28. Correct equation for photosynthesis is

A. $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$

B. $6CO_2 + 6H_2O \xrightarrow{\text{Light}} C_6H_{12}O_6 + 6O_2$

C. $6CO_2 + 12H_2O \xrightarrow{\text{Light}} C_6H_{12}O_6 + 6O_2 + 6H_2O$

D. $6CO_2 + 10H_2O \xrightarrow{\text{Light}} C_6H_{12}O_6 + 6O_2 + 4H_2O$

Answer: C

View Text Solution

29. Dark reaction in photosynthesis is called so because

A. It can occur in dark alone

B. It does not require direct light energy

C. It cannot occur during day time

D. It occurs more rapidly at night

Answer: B

Watch Video Solution

30. The process of taking in CO_2 by plants and releasing O_2 is component of

A. Transpiration

B. Respiration

C. Endosmosis

D. Photosynthesis

Answer: D

Watch Video Solution

31. A photosynthetic organism which does not release oxygen is

A. Blue-green alga

B. Green sulphur bacterium

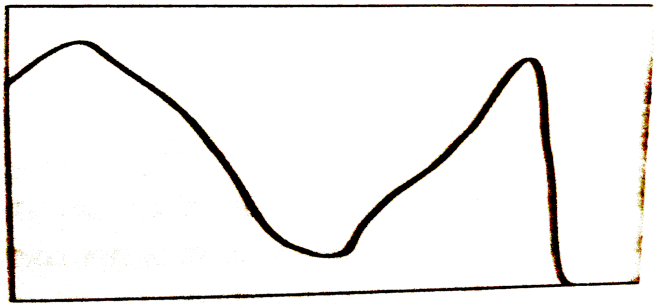
C. Green alga

D. Algal component of lichen

Answer: B

Watch Video Solution

32. The following graph shows the



A. Absorption spectrum of chlorophyll a

B. Absorption spectrum of chlorophyll b

C. Action spectrum of photosynthesis

D. Both A and B

Answer: C

Watch Video Solution

33. What is true for photosynthesis

A. Both carbon dioxide and water are oxidised

B. Both carbon dioxide and water are reduced

C. Carbon dioxide is oxidised and water is reduced

D. Carbon dioxide is reduced and water is oxidised

Answer: D

Watch Video Solution

34. Who demonstrated for the first time that in photosynthesis, oxygen is evolved from water

A. Ruben and Kamen

B. Calvin

C. R. Hill

D. Govindji

Answer: C

Watch Video Solution

35. Moll's experiment show

A. Unequal transpiration from two surfaces of leaf

B. CO_2 is essential for photosynthesis

C. Relation between transpiration and absorption

D. Chlorophyll is essential for photosynthesis

Answer: B

Watch Video Solution

36. The First scientist to find out the role of light in photosynthesis was

A. Ingenhousz

B. Senebier

C. Priestley

D. Sachs

Answer: A

Watch Video Solution

37. Isotopes popularly know to have been used in the study of photosynthesis are

or

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

A. ^{11}C and ^{32}P

B. ^{15}C and ^{32}P

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

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

Answer: D

Watch Video Solution

38. A photosynthesizing plant is releasing O more than the normal. The plant must have been supplied with

A. O_3

B. $H_2Owith^{18}O$

C. $C_6H_{12}O_6with^{18}O$

D. $CO_2with^{18}O$

Answer: B

Watch Video Solution

39. Light energy is used in photosynthesis for

A. Breakdown of H_2O

B. Breakdown of CO_2

C. Activation of chlorophyll

D. Breakdown of $C_6H_{12}O_6$

Answer: C

Watch Video Solution

40. Bacterial photosynthesis differs from photosynthesis of others in

A. Not liberating oxygen

B. Non-requirement of light

C. Non-fixation of energy

D. Requirement of host organism

Answer: A

Watch Video Solution

41. Which colour of light gives maximum absorption peak of chlorophyll a

A. Red

B. Blue

C. Green

D. Yellow

Answer: B

Watch Video Solution

42. Which of the following is least effective in photosynthesis

A. Sunlight

B. Red light

C. Blue light

D. Green light

Answer: D

Watch Video Solution

43. Plants purify air during

A. Photosynthesis

B. Respiration

C. Transpiration

D. Desiccation

Answer: A

Watch Video Solution

44. Solarisation is

A. Formation of chlorophyJJ

B. Destruction of chlorophyll

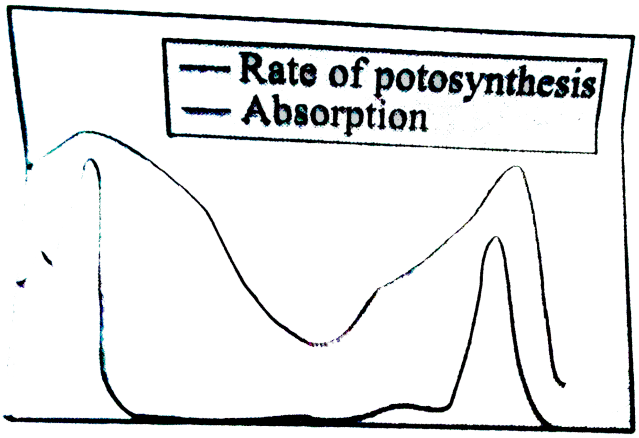
C. Utilisation of sunlight

D. Effect of solar light

Answer: B

Watch Video Solution

45. The following figure shows the



A. Action spectrum of photosynthesis superimposed on absorption spectrum of chlorophyll a .

B. Action spectrum of photosynthesis supenmposed on absorption spectrum of chlorophyll b

C. Both A and B

D. Absorption spectrum of carotenoids superimposed on action spectrum of photosynthesis

Answer: A

View Text Solution

46. Which is not an accessory pigment?

A. Carotene

B. Xanthophyll

C. Chlorophyll a

D. Chlorophyll b

Answer: C

View Text Solution

47. Which one is product in respiration and reagent in photosynthesis?

A. O_2

B. CO_2

C. CO

D. N_2

Answer: B

Watch Video Solution

48. A photosynthetic cell is provided with $^{14}CO_2$ and $H_2{}^{18}O$. They form

A. $C_5H_{12}O_6 + O_2$

B. $^{14}C_8H_{12}O_6 + O_2$

C. $^{14}C_6H_{12}O_6 + {}^{18}O_2$

D. $C_6H2_{12}O_6 + {}^{18}O_2$

Answer: C

Watch Video Solution

49. Which one of the following is the common storage product of photosynthesis

A. Protein

B. Fat

C. Starch

D. Sucrose/glucose

Answer: C

Watch Video Solution

50. Carotenes protect plants from

A. Photooxidation

B. Desiccation

C. Photorespiration

D. Photosynthesis

Answer: A

Watch Video Solution

51. The hypothesis that all photosynthetic organic require a source of hydrogen was give by

A. Hill

B. Ruben and Kamen

C. van Niel

D. Emerson and Arnold

Answer: C

Watch Video Solution

52. At carbon atom III, chlorophyll a has

A. Methyl group

B. Aldehyde group

C. Carboxyl group

D. Magnesium

Answer: A

Watch Video Solution

53. Who first of all indicated that water is electron donor in photosynthesis ?

A. Arnon

B. Calvin

C. Emerson

D. van Niel

Answer: D

Watch Video Solution

54. Chlorophyll is soluble in

A. Water

B. Organic solvents

C. Both A and B

D. None of the above

Answer: B

Watch Video Solution

55. Balance between CO_2 and O_2 is maintained by

A. Transpiration

B. Photosyntesis

C. Photorespiration

D. C_4 pathaway

Answer: B

Watch Video Solution

Section A Topicwise Questions Topic 2 Light Reaction The Electron Transport Cyclic And Non Cy

1. Light harvesting complexes(LHC) are made up of hundreds of pipgment molecules bound to protiens. In LHC reaction centre is formed by

A. A single chlorophyll a molecule

B. All the pigments except the one molecule of chlorophyll a

C. Carotenoids and xanthophylls

D. Both B and C

Answer: A

View Text Solution

2. Fill in the blanks

The water splitting complex is associated with the ...a...which itself is physically located on the ..b... of the membrane of the ...c... .

A. a-PS I, b-inner, c-stroma lamella

B. a-PS II, b-outer, c-grana

C. a- PS II, b-inner, c-thylakoid

D. a- PS II, b-outer, c-thylakoid

Answer: C

Watch Video Solution

3. The PS Il and PS I in Z-scheme are connected by

A. Electron transport system

B. Light harvesting complex

C. Cyclic photophosphorylation

D. Non-cylic photophosphorylation

Answer: A

Watch Video Solution

4. A possible location of the cyclic photophosphorylation

A. Grana

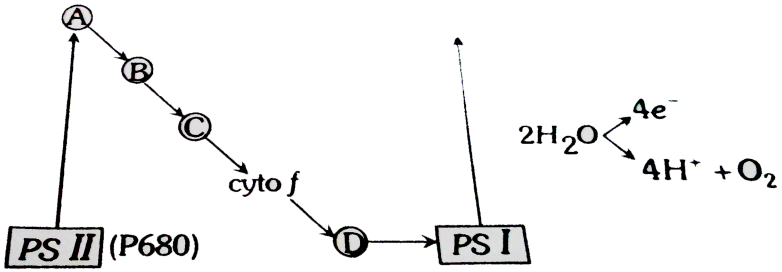
B. Stroma

C. Stroma lamellae

D. Thylakoid

Answer: C

Watch Video Solution

5. 

In the above schematic diagram, which is plastocyanin

A. a

B. b

C. c

D. d

Answer: D

Watch Video Solution

6. Which one of the following statements about the events of non-cyclic photophosphorylation is not correct

A. Photolysis of water takes place

B. Only one photosystem participates

C. ATP and NADPH are produced

D. O_2 is released

Answer: B

Watch Video Solution

7. Raw materials required for light reactions are

A. ADP and H_2O

B. ADP, H_2O and NADP

C. ADP and $NADPH_2$

D. ATP and NADP

Answer: B

Watch Video Solution

8. Which one is photophosphorylation

A. ADP+ AMP $\xrightarrow{\text{Light energy}}$ ATP

B. ADP+ Inorganic phosphate $\xrightarrow{\text{Light energy}}$ ATP

C. ADP + Inorganic $PO_4 \rightarrow$ ATP

D.

Answer: B

Watch Video Solution

9. During photosynthesis O_2 is liberated by oxidation of

A. H_2O

B. Phosphoglyceraldehyde

C. None of the above

D.

Answer: A

Watch Video Solution

10. The process in which water is split during photosynthesis is

A. Photolysis

B. Hydrolysis

C. Plasmolysis

D. Haemolysis

Answer: A

Watch Video Solution

11. Cyclic photophosphorylation produces

A. NADPH

B. ATP and NADPH

C. ATP, NADPH and O_2

D. ATP only

Answer: D

Watch Video Solution

12. Photophosphorylation means synthesis of

A. ATP from ADP

B. NADP

C. ADP from ATP

D. PGA

Answer: A

Watch Video Solution

13. The two pigment system theory of photosynthesis was proposed by

A. Hill

B. Blackman

C. Emerson

D. Arnon

Answer: C

Watch Video Solution

14. Which one directly transfers electrons to $NADP^+$ during light reaction?

A. PS I

B. PS II

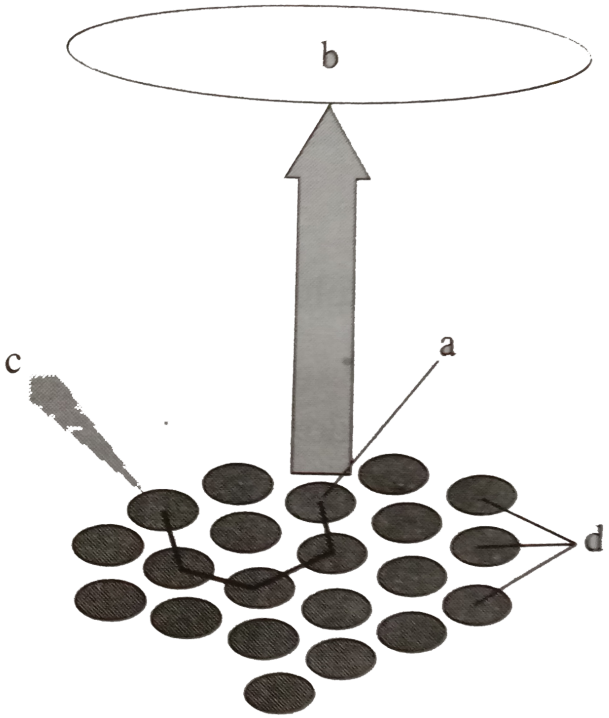
C. Cytochromes

D. Plastocyanin

Answer: A

Watch Video Solution

15. Recognise the figure and find out the correct matching.



A. a-pr1mary acceptor, b-reaction centre, c- p1gment molecules, d-photon

B. a--pri.mary acceptor, b--reaction centre, d- ?,gment molecules, c-photon

C. . pnmary acceptor, a-reaction centre, d- pigment molecules, c-photon

D. d-pri mary acceptor, a-reaction centre, b--

Answer: C

View Text Solution

16. Bacterial photosynthesis contains

A. PS I

B. PS II

C. Both PS I and PS II

D. None of them

Answer: A

Watch Video Solution

17. The evidence that during photosynthesis oxygen comes from water

A. Photosynthetic bacteria employ H_2S and CO_2 to form carbohydrates, water and sulphur

B. Isolated illuminated chloroplasts release oxygen if provided with potassium ferrocyanide

C. Isotopic ^{18}O provided as $H_2{}^{18}O$ appears as $^{18}O_2$ liberated in photosynthesis

D. All of the above

Answer: D

Watch Video Solution

18. Main difference between chlorophyll a and chlorophyll b is

A. $-CH_3$ of chlorophyll a is replaced by-CHO in chlorophyll b

B. Chlorophyll a is linear while chlorophyll b is branched

C. Chlorophyll a has no Mg

D. All of the above

Answer: A

Watch Video Solution

19. Liberation of oxygen when green cells in water are exposed to sunlight in presence of suitable acceptor is

A. Emerson effect

B. Blackman's reaction

C. Hill's reaction

D. Arnon reaction

Answer: C

Watch Video Solution

20. Photophosphorylation is the process in which

A. CO_2 and O_(2)` unite

B. Phosphoglyceric acid is produced

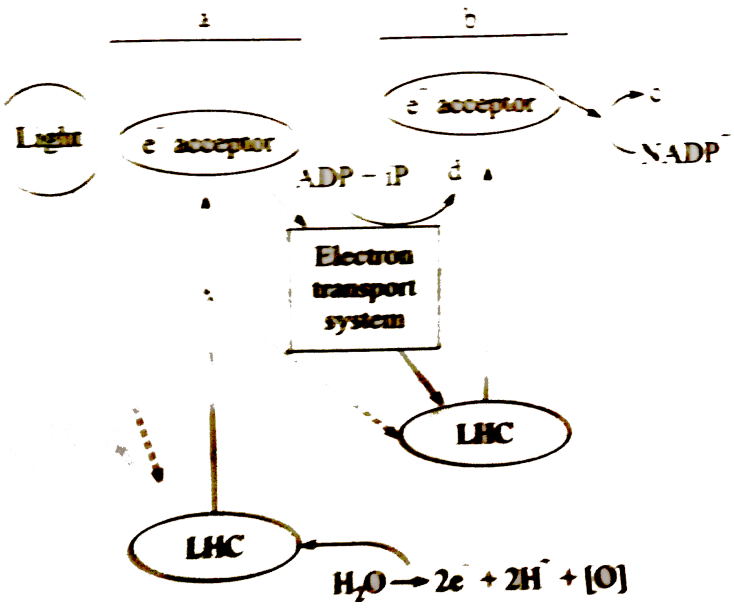
C. Aspartic acid is formed

D. Light energy is converted into chemical energy through production of ATP

Answer: D

Watch Video Solution

21. Recognise the figure and find out the correct matching.



A. a-PS I, b-PS II, c-ATP, d-NADH

B. a- PS II, b-PS I, c-NADH, d-ATP

C. a-PS I, b-PS II, c-NADPH, d-ATP

D. a-PS I, b-PS II, c-NADPH, d-ATP

Answer: D

View Text Solution

22. ATP formation during photosynthesis is

A. Phosphoryation

B. Photophosphorylation

C. Oxidative phosphorylation

D. None of the above

Answer: B

Watch Video Solution

23. Red drop discovered by Emerson is due to disruption of photochemical activity of

A. Carotenoids

B. PS I

C. PS II

D. Both Band C

Answer: C

Watch Video Solution

24. Leaves are green because they

A. Absorb green light

B. Do not absorb but reflect green light

C. Utilise green light

D. Absorb and reflect green light

Answer: B

Watch Video Solution

25. Pigment acting as a reaction centre during photosynthesis is

A. Carotene

B. Phytochrome

C. P_{700}

D. Cytochrome

Answer: C

Watch Video Solution

26. Which one occurs both during cyclic and non-cyclic modes of photophosphorylation?

A. Involvement of both PS I and PS II

B. Formation of ATP

C. Release of O_2

D. Formation of NADPH

Answer: B

Watch Video Solution

27. In the two light reactions of photosynthesis

A. PS I produces strong oxidant while PS II a strong reductant

B. PS I produces strong reductant NADPH while PS II a strong oxidant

C. PS I emits electrons for PS II

D. PS I produces ATP which is not fonned by PS II

Answer: B

Watch Video Solution

28. Which is sensitive to longer wavelengths of light

A. PS II

B. PS I

C. Phosphorylation

D. Photolysis

Answer: B

Watch Video Solution

29. Pigment system I performs independently

A. Non-cyclic photophosphorylation

B. Cyclic photophosphorylation

C. Oxidative phosphorylation

D. Photolysis

Answer: B

Watch Video Solution

30. The products of photochemical reaction are

A. O_2 ATP and NADPH

B. O_2

C. ATP and NADPH

D. Organic compounds especially carbohydrates

Answer: A

Watch Video Solution

31. Cyclic phosphorylation cannot sustain photosynthesis

A. PS I does not function beyond 680 nm

B. No evolution of oxygen

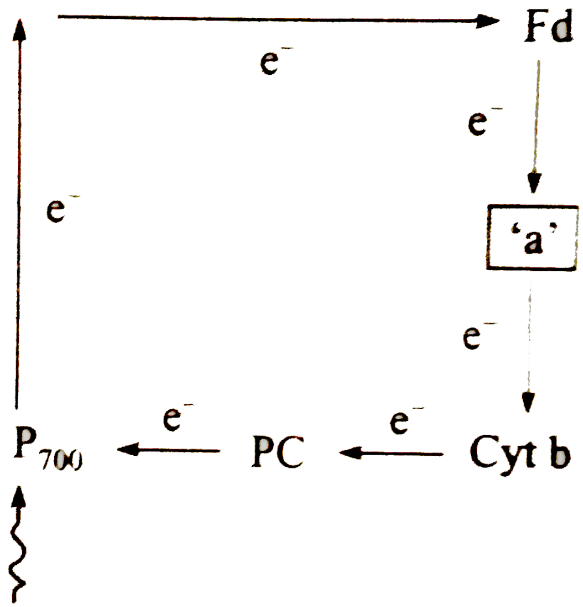
C. Unidirectional cyclic movement electrons

D. Only ATP is formed, NADPH is not formed

Answer: D

Watch Video Solution

32. In the chart of photophosphorylation, what does a represent ?



A. Cyt a

B. Cyt a_3

C. FRS

D. PQ

Answer: D

View Text Solution

33. Electrons from excited chlorophyll of PS II are accepted first by

A. Quinone

B. ferredoxin

C. Cytchrome b

D. Cytochrome f

Answer: A

Watch Video Solution

34. First electron acceptor of PS I is

A. Phaeophytin

B. Plastoquinone

C. Cytochrome b

D. Fe-S protein

Answer: D

Watch Video Solution

35. Photolysis of water requires

A. Light

B. Chlorophyll

C. Both A and B

D. Electron transport

Answer: C

Watch Video Solution

36. Photolysis of water molecule yields

A. 2 electrons and 4 protons

B. 4 electrons and 4 protons

C. 4 electrons and 2 protons

D. 2 electrons and 2 protons

Answer: B

Watch Video Solution

37. Four electrons produced during photolysis of water will enter

A. PS I

B. PQ

C. PS II

D. PC

Answer: C

Watch Video Solution

38. In non-cyclic photophosphorylation, PS I is reduced by

A. Electron from PS II

B. Electron from ferredoxin

C. Hydrogen from water

D. Hydrogen from PS II

Answer: A

Watch Video Solution

39. In photosystem I, the first electron acceptor is

A. An Fe-S protein

B. Ferredoxin

C. Cytochrome

D. Plastocyanin

Answer: A

Watch Video Solution

40. Which one provides electrons for reduction reactions in photosynthesis?

A. NADPH

B. Chlorophyll

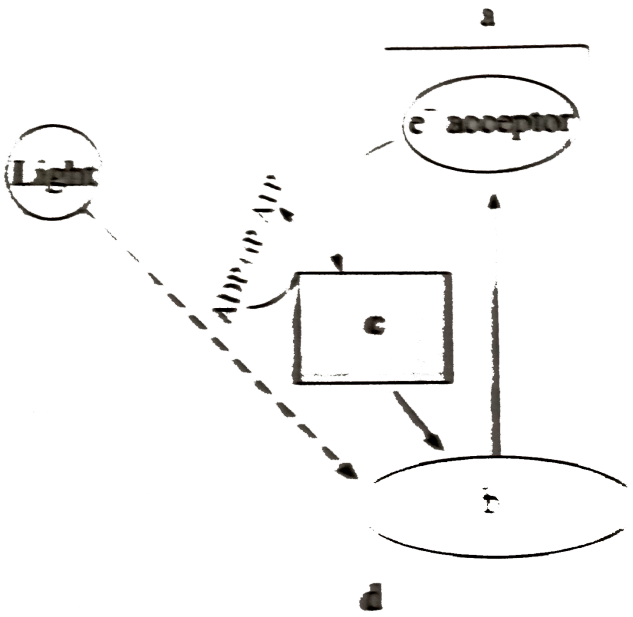
C. Cytochrome

D. Water

Answer: D

Watch Video Solution

41. Recognise the figure and find out the correct matching



A. a-PS I, b-P_{700}, c-ETS, d-Cyciic photophosphorylation

B. a-PS II, b-P_{680}, c- ETS, d-Cyclic photophosphorylation

C. a-PS II, b-P_{700}, c-Z scheme, d- ETS

D. a-PS I, b-P_{680}, c-ETS, d-Cyclic photophosphorylation

Answer: A

View Text Solution

42. Water releases protons. Twelve water molecules will release

A. $24H^+$

B. $48H^+$

C. $12H^+$

D. $6H^+$

Answer: A

Watch Video Solution

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

A. 100

B. 200

C. 300

D. 400

Answer: C

Watch Video Solution

44. ATP synthase of chloroplasts is similar to that of

A. Mitochondria

B. Peroxisomes

C. Golgi bodies

D. Microsomes

Answer: A

Watch Video Solution

45. Non-cyclic photophosphorylation produces

A. NAD^+

B. NADH

C. NADPH

D. $NADP^+$

Answer: C

Watch Video Solution

46. In electron transport system, the last electron acceptor of photophosphorylation is

A. NADPH

B. $NADP^+$

C. Atomic oxygen

D. Chlorophyll-a

Answer: B

Watch Video Solution

47. ADP $\rightarrow$ ATP reaction occurs when two protons $\left(H^{+}\right)$ are passed from

A. Thylakoid lumen to cytosol

B. Thylakoi.d to lumen

C. Lumen of thylakoid to stroma

D. Strama to thylakoid lumen

Answer: C

Watch Video Solution

48. ETC of photosynthesis process is

A. Bound to thylakoid membrane

B. Present in stroma

C. Bound to outer chloroplast membrane

D. Dispersed in cytosol

Answer: A

Watch Video Solution

49. The core metal of chlorophyll is

Or

Which element is left when chlorophyll is burnt

A. Mn

B. Mg

C. Fe

D. Ni

Answer: B

Watch Video Solution

50. PS I and PS II occur over

A. Grana of chloroplast

B. Matrix of mitochondria

C. Stroma of chloroplast

D. Inner membrane of mitochondrion

Answer: A

Watch Video Solution

51. Steps in non-cyclic photophosphorylation include passage of electrons along

A. FRS $\rightarrow$ FD $\rightarrow$ Cyt b_6 $\rightarrow$ Cytf $\rightarrow$ PC $\rightarrow$ Chl a

B. Chl a $\rightarrow$ Cyt b_6 $\rightarrow$ Cytf $\rightarrow$ PC $\rightarrow$ PS I $\rightarrow$ FRS $\rightarrow$ FD

C. Chl a $\rightarrow$ PQ $\rightarrow$ Cyt b_6 $\rightarrow$ Cyt f $\rightarrow$ PC $\rightarrow$ PS I $\rightarrow$ FRS $\rightarrow$ FD

D. PQ $\rightarrow$ Cyt b_6 $\rightarrow$ Cytf $\rightarrow$ PC $\rightarrow$ PS I $\rightarrow$ FRS $\rightarrow$ FD

Answer: D

Watch Video Solution

52. Carbon dioxide joins the photosynthetic pathway in

A. PS I

B. PS II

C. Light reaction

D. Dark reaction

Answer: D

Watch Video Solution

53. First reaction in photosynthesis is

A. Photolysis of water

B. Excitation of chlorophyll molecules

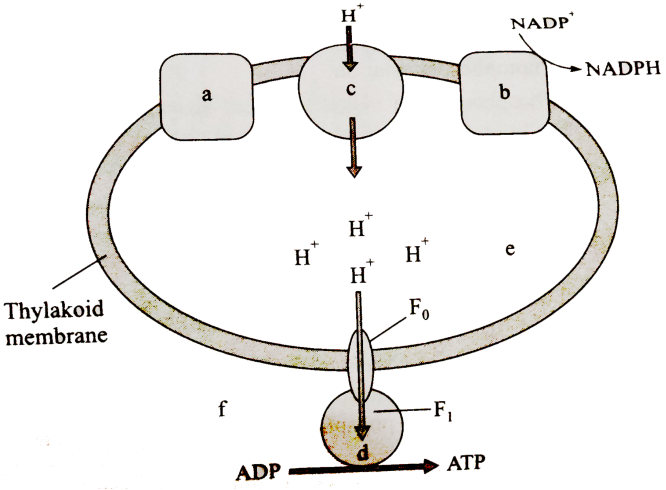
C. Formation of ATP

D. Fixation of CO_2

Answer: B

Watch Video Solution

54. Recognise the figure and find out the correct matching



A. a-ATP synthase, b-photosystem I, c-photosystem II, e-stroma, f-lumen, d--cytochrome b and f

B. d-ATP synthase, a-photosystem I, b--photosystem II, f-stroma, e-lumen, c--cytochrome band f

C. d-ATPsynthase, b-photosystem I, a-photosystem II, f-stroma, e-lumen, c--cytochrome band f

D. d-ATPsynthase, a-pbotosystem I, b-photosySlern II. e-stroma, f-lumen, c--cytochrorne b and f

Answer: C

Watch Video Solution

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

A. Xanthophyll

B. Chlorophyll a

C. Chlorophyll b

D. Chlorophyll c

Answer: B

Watch Video Solution

56. Which of the following contains copper?

A. Quinone

B. Plastoquinone

C. Plastocyanin

D. Cyt b_5

Answer: C

Watch Video Solution

57. The process of photophosphorylation was discovered by

A. Calvin

B. Amon

C. Priestley

D. Warburg

Answer: B

Watch Video Solution

58. In photosynthesis, photolysis of water is used in

A. Reduction of NADP

B. Oxidation ofNADP

C. Oxidation of FAD

D. None of the above

Answer: A

Watch Video Solution

59. ATP formation in chloroplast and mitochondrion is explained by

A. Oholodny-Went model

B. Chemi-osmotic theory of Mitchell

C. Munch's mass flow theory

D. Relay pump theory of Godlewski

Answer: B

Watch Video Solution

60. Constituents of pigment system I are located on

A. Granal thylakoids

B. Stromal thylakoids

C. Outer surface of granal and stromal thylakoids

D. Stroma

Answer: C

Watch Video Solution

61. ATP synthesis during light reaction is

A. Oxidative phosphorylation

B. Photolysis

C. Photophosphorylation

D. Phosphorylation

Answer: C

Watch Video Solution

Section A Topicwise Questions Topic 3 Dark Reaction The Calvin Cycle

1. Read the following statements and find out the incorrect statement

A. Second step of Calvin cycle (i.e, reduction) involve utilisation of 2 molecules of ATP for reduction and 2 of NADPH for phosphorylation per CO_2 molecule fixed

B. The regeneration steps require one ATP for phosphorylation to fonn RuBP.

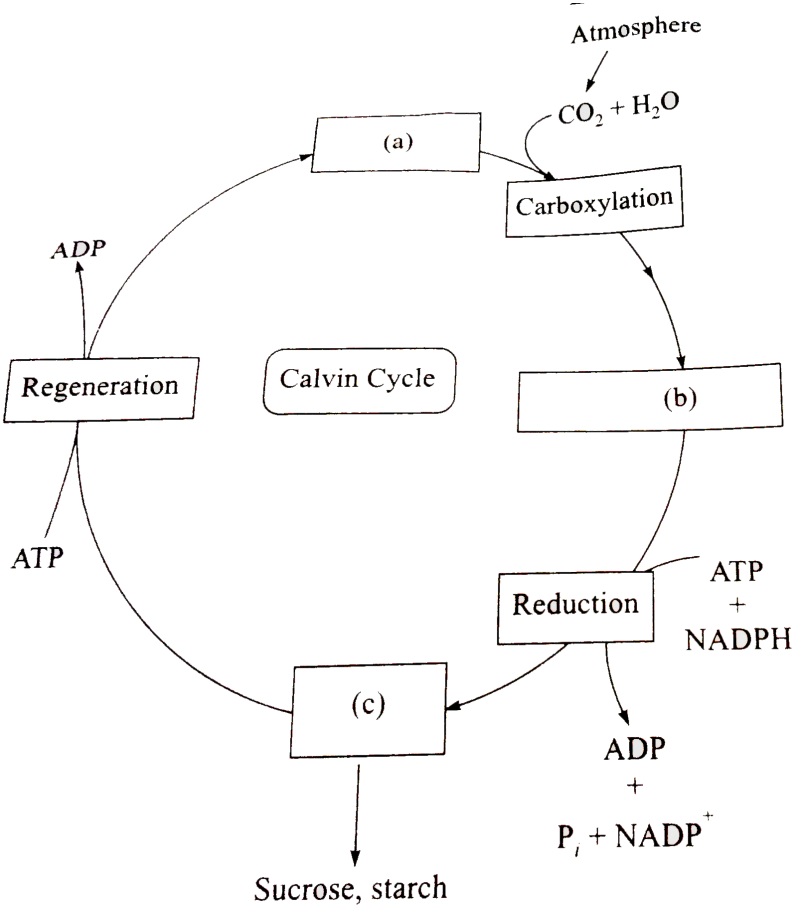
C. It is probably to meet the differences in number of ATP and NADPH used in dark reaction that the cyclic phosphorylation takes place.

D. Plants that are adapted to dry tropical regions have the C_4 pathway

Answer: A

Watch Video Solution

2. Choose the correct combinations of labelling in Calvin cycle-



A. a-RuBP, b--Triose phosphate. c-PGA

B. a-PGA, b--RuBP, c-Triose phosphate

C. a- PGA, b-Triose phosphate. c-RuBP

D. a- RuBP. b-PGA. c-Triose phosphate

Answer: D

Watch Video Solution

3. How many PGAL molecules would regenerate 15 RuBP?

A. 30

B. 25

C. 15

D. 20

Answer: A

Watch Video Solution

4. The carbon dioxide acceptor in Calvin cycle/C_3plants is

A. Phosphoenol pyruvate (PEP)

B. Ribulose 1,5-diphosphate (RuBP)

C. Phosphoglyceric acid (PGA)

D. Ribulose monophosphate (RMP)

Answer: B

Watch Video Solution

5. Algae employed by Calvin et al in experiments on photosynthesis belong to

A. Euglena and Scenedesmus

B. Chara

C. Chlamydomonas and Chlorella

D. Chlorella and Scenedesmus

Answer: D

Watch Video Solution

6. Which technique has helped in inverstigation of calvin cycle ?

A. X-ray crystallography

B. X-ray technique

C. Radioactive isotope technique

D. Intermittent light

Answer: C

Watch Video Solution

7. Assimilatory power produced in Hill reaction and used in Blackman's reaction refers to

A. Generation of ATP and NAOPH

B. Reduction of CO_2

C. Splitting of water

D. Disintegration of plastids

Answer: A

Watch Video Solution

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

A. Chlamydomonas

B. Chlorella

C. Spinach leaf

D. Hydrilla

Answer: B

Watch Video Solution

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

A. PGA

B. PGAL

C. RuBP

D. Oxalo-acetic acid

Answer: A

Watch Video Solution

10. During dark reaction the three carbon atoms of 3-PGA are derived from

A. RuBP only

B. CO_2 only

C. RuBP + CO_2

D. RuBP +CO_2 + PEP

Answer: C

Watch Video Solution

11. In photosynthesis

A. ATP is formed in light reaction and glucose in dark reaction

B. Both ATP and glucose are produced in dark reaction

C. Both ATP and glucose arc produced in light reaction

D. Both ATP and glucose are formed in light

Answer: A

Watch Video Solution

12. Dark reaction of photosynthesis is

A. Hill reaction

B. Calvin cycle

C. Cyclic photophosphorylation

D. Non-cyclic photophosphorylation

Answer: B

Watch Video Solution

13. For synthesis of a molecule of glucose. the requirement of ATP and NADPH is respectively

A. 15 and 10

B. 12 and 18

C. 12 and 6

D. 18 and 12

Answer: D

Watch Video Solution

14. Nobel Prize was awarded to the scientist for discovering the pathway of carbon assimilation

A. Watson

B. Krebs

C. Calvin

D. Parnas

Answer: C

Watch Video Solution

15. A molecule of glucose is fonned in Calvin cycle from

A. $6CO_2$ + 12 ATP

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

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

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

Answer: B

Watch Video Solution

16. Which statement about photosynthesis is false?

A. Enzymes required for carbon fixation are located in grana of chloroplasts

B. In green plants, both PS I and PS II are required for synthesis of NADPH + H^+

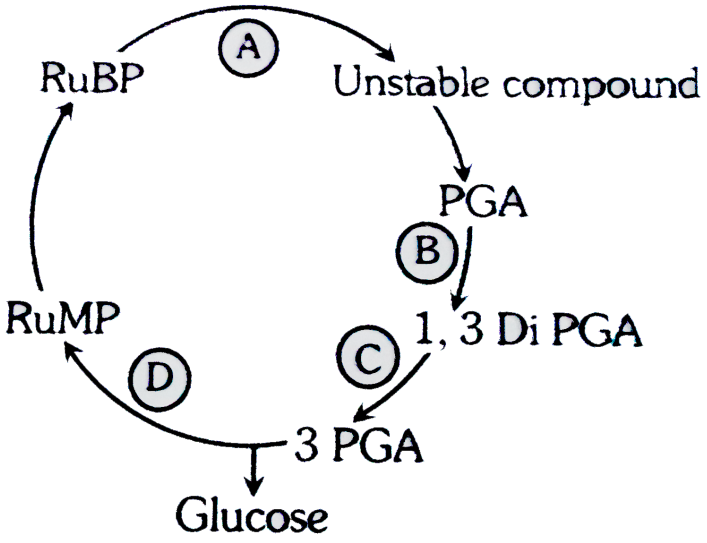
C. Electron carriers of photophosphorylation are located on thylakoid membranes

D. Photosynthesis is a redox process in which water is oxidised and CO_2 is reduced

Answer: A

Watch Video Solution

17. In a condensed schematic representation of drak reaction of photosynthesis gien below , steps are indicated by alphabets. Select the option where the alphabets are correctly identified



A. a-Regeneration, b-CO_2 fixation, c-Reduction, cl-Phosphorylation

B. a- CO_2 fixation, 6--Phosphorylation, c- Reduction, d-Regeneration

C. a-CO_2 fixation. 6--Phosphorylation, c- Regeneration, ct-Reduction

D. a-CO_2 fixation, 6--Reduction, c- Phosphorylation, ct-Regeneration

Answer: B

Watch Video Solution

18. About $71\ \%$ of total global carbon is found is

A. Oceans

B. Forests

C. Agro ecosystem

D. Grasslands

Answer: A

Watch Video Solution

19. PGA is reduced through

A. $NADPH_2$

B. $FADH_2$

C. CoA

D. CoQ

Answer: A

Watch Video Solution

20. 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-biphoshate is formed

A. 3, 1, 2

B. 3, 2, 1

C. 1,2,3

D. 2, 1, 3

Answer: A

Watch Video Solution

21. Calvin cycle involves

A. Oxidative carboxylation

B. Reductive carboxylation

C. Oxidative decarboxylation

D. Reductive decarboxylation

Answer: B

Watch Video Solution

22. 3-PGA is first stable product of

A. Carbon oxidation cycle

B. Carbon reduction cycle

C. Reductive amination

D. Malic acid synthesis

Answer: B

Watch Video Solution

23. Carbon in carbon dioxide is radioactively labelled. The product in which radioactive carbon can be traced in C_1 plants is

A. PEP

B. RuBP

C. PGAL

D. PGA

Answer: D

Watch Video Solution

24. How much oxygen is formed from 264 g of CO_2 and 216 g of H_2O ?

A. 48 g

B. 480 g

C. 180 g

D. 192 g

Answer: D

Watch Video Solution

25. The first step in dark reaction of photosynthesis is

A. Formation of ATP

B. Attachment of carbon dioxide to a pentose sugar

C. Excitement of an electron of chlorophyll by photon of light

D. Ionisation of water

Answer: B

Watch Video Solution

26. RuBisCO is enzyme for

A. Regeneration of RuBP

B. Photolysis of water

C. CO_2 fixation

D. All of the above

Answer: C

Watch Video Solution

27. Dark reactions of photosynthesis occur in

A. Granal thylakoid membranes

B. Stromal lamella membranes

C. Stroma outside photosynthetic lamellae

D. Periplastidial space

Answer: C

Watch Video Solution

Section A Topicwise Questions Topic 4 C 4 Pathway And Photorespiration

1. In C_4 pathway, CO_2 fixation in mesophyll cells is carried out by the enzyme

A. PEP carboxylase

B. Pyruvate dehydrogenase

C. RuBisCo

D. Pyruvate decarboxylase

Answer: A

Watch Video Solution

2. Photorespiration is called

A. C_2 cycle

B. C_3 cycle

C. C_4 cycle

D. C_5 cycle

Answer: A

Watch Video Solution

3. Which does not show HSK pathway?

A. Maize

B. Jowar

C. Sugarcane

D. Sunflower

Answer: D

Watch Video Solution

4. Which plant shows chloroplast dimorphism?

A. Sugarcane

B. C_4 plants

C. Sugar Beet

D. Both A and B

Answer: D

Watch Video Solution

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

A. Guard cells

B. Mesophyll

C. Bundle sheath

D. All of the above

Answer: B

Watch Video Solution

6. In C_4 plants, synthesis of sugars/final CO_2 fixation occurs in

A. Palisade cells

B. Spongy cells

C. Undifferentiated mesophyll cells

D. Bundle sheath cells

Answer: D

Watch Video Solution

7. Which one is most efficent converter of sunlight ?

A. Sugarcane

B. Rice

C. Wheat

D. papaya

Answer: A

Watch Video Solution

8. In C_4 plants, Calvin cycle operates in

A. Stroma of bundle sheath chloroplasts

B. Grana of bundle chloroplast

C. Grana of mesophyll chloroplasts

D. Stroma of mesophyll chloroplasts

Answer: A

Watch Video Solution

9. Sugarcane show high efficiency of CO_2 fixation because of

A. Calvin cycle

B. EMP pathway

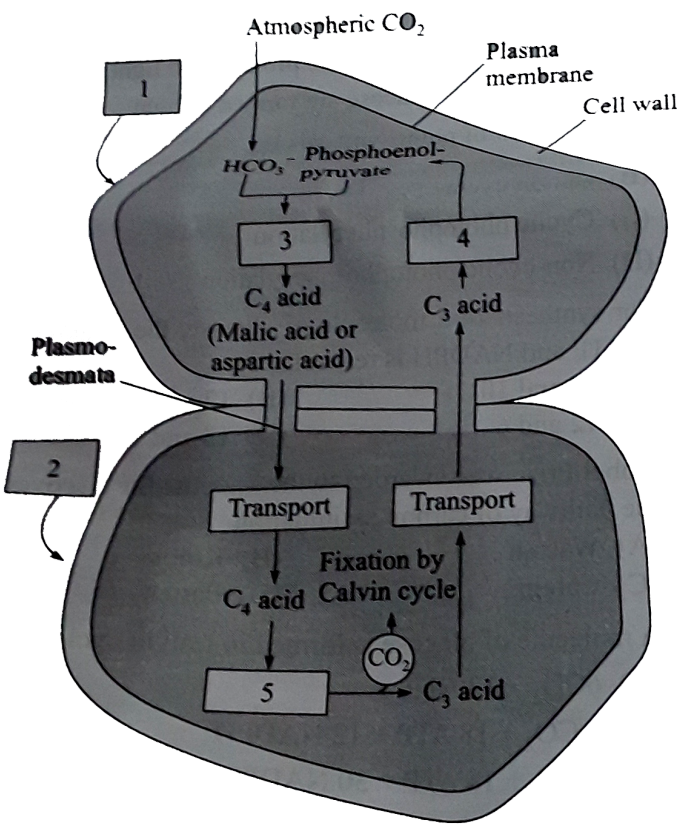
C. Hatch and Slack pathway

D. TCA cycle

Answer: C

Watch Video Solution

10. Choose the correct combination of labelling 1-5



A. 1-Mesophyll cell, 2-Bundle sheath cell, 3- Regeneration, 4--Fixation, 5-

Decarboxylation

B. I-Bundle sheath cell, 2-Mesophyll cell, 3- Fixation, 4--Regeneration, 5-Decarboxylation

C. 1-Mesophyll cell, 2-Bundle sheath cell, 3- Fixation, 4-Decarboxylation, 5-Regenerntion

D. 1-Mesophyll cell, 2-Bundle sheath cell. 3- Fixation, 4--Regeneration, 5-Decarboxylarjon

Answer: D

Watch Video Solution

11. The first carbon dioxide acceptor in C_4-plants is

A. Phosphoenol-pyruvate

B. Ribulose 1,5-diphosphate

C. Oxalo-acetic acid

D. Phosphoglyceric acid

Answer: A

Watch Video Solution

12. The C_4 plants are different from the C_3 plants with reference to the

A. The substance that accepts CO_2 in carbon assimilation

B. Types of end product of photosynthesis

C. The number of NADPH that are consumed in preparing sugar

D. Types of pigments involved in photosynthesis

Answer: A

Watch Video Solution

13. Photorespiration is characteristic of

A. C_3 plants

B. C_4 plants

C. CAM plants

D. All of the above

Answer: A

Watch Video Solution

14. C_4 Plants belong to

A. Gramineae

B. Monocots

C. Dicots

D. Both monocots and dicots

Answer: D

Watch Video Solution

15. In case of C_4 pathway

A. CO_2 combines with PGA

B. CO_2 combines with PEP

C. CO_2 first combines with RuBP

D. CO_2 combines with RMP

Answer: B

Watch Video Solution

16. Which one is a C_4 plant?

A. Papaya

B. Pea

C. Potato

D. Maize/Corn/Sorghum

Answer: D

Watch Video Solution

17. Kranz anatomy occurs in

A. Leaves

B. Stem

C. Flower

D. Seed

Answer: A

View Text Solution

18. CAM photosynthesis occurs in plants with

A. Thin green leaves with reticulate venation

B. Thin green leaves with parallel venation

C. Thin coloured leaves

D. Fleshy green leaves

Answer: D

Watch Video Solution

19. C_4 cycle was discovered by

A. Hatch and Slack

B. Calvin

C. Hill

D. Arnon

Answer: A

Watch Video Solution

20. Glycolate accumulates in chloroplasts when there is

A. High CO_2

B. Bright light

C. Low temperature

D. Low CO_2

Answer: D

Watch Video Solution

21. Which is wrongly matched?

A. Sorghum- Kranz anatomy

B. PS II-700

C. Photorespiration- C_3

D. PEP carboxylase-Mesophyll cells

Answer: B

Watch Video Solution

22. Which of the following statements regarding C_4 pathway is false

A. The primary CO_2 acceptor is a 5-carbon molecule

B. The initial carboxylation reaction occurs in mesophyll

C. Calvin pathway does not take place in the mesophyll cells but does so only in bundle sheath cells

D. Leaves that fix CO_2 have two cell types

Answer: A

Watch Video Solution

23. CAM plants do not show photorespiration due to

A. Keeping stomata closed during day time

B. Using PE carboxylase

C. Fixing CO_2 into organic acid in night and releasing CO_2 during day

D. Performing Calvin cycle at night

Answer: C

Watch Video Solution

24. Photorespiration occurs in

A. Green photosynthetic parts

B. All living cells

C. Mitochondria

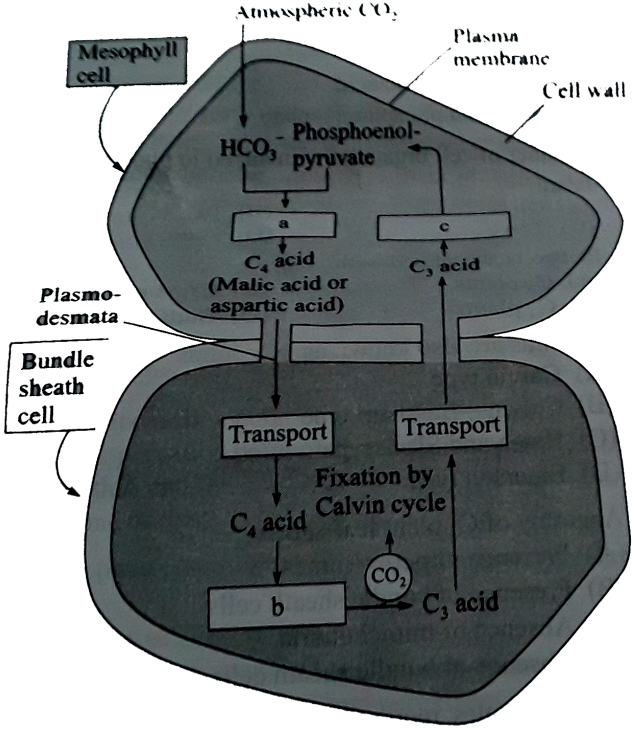
D. Root

Answer: A

Watch Video Solution

25. Study the pathway given below :

In which of the following options correct words for all the three blanks a,b, and c are indicated.



A. a-Decarboxylation,b-Reduction,c-Regeneation

B. a-Fixation,b-Transamination,c-Regeneration

C. a-Fixation,b-Decarboxylation,c-Regeneration

D. a-Carboxylation,b-Decarboxylation,c-Reduction

Answer: C

Watch Video Solution

26. Respiration initated in chloroplasts and occurs in light is called

A. Aerobic respiration

B. Anaerobic respiration

C. Fermentation

D. Photorespiration

Answer: D

Watch Video Solution

27. C_4 plant shows efficiency even in

A. Low concentration of CO_2

B. Low temperature

C. High CO_2 concentration

D. At low water availability

Answer: A

Watch Video Solution

28. Carbon assimilation occurs in bundle sheath cells of

A. CAM plants

B. C_4 plants

C. C_3 plants

D. All of the above

Answer: B

Watch Video Solution

29. In sugarcane plant $\hat{}(14)CO_2$ is fixed in malic acid, in which the enzyme that fixes CO_2 is

A. RuBP carboxylase

B. PEP carboxylase

C. Ribulose phosphate kinase

D. Fructose phosphatase

Answer: B

Watch Video Solution

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

A. It occurs in chloroplasts

B. It occurs in day time only

C. It is characteristic of C_4 plants

D. It is characteristic of C_3 plants

Answer: C

Watch Video Solution

31. In presence of high concentration of oxygen. RuBP carboxylase converts RuBP to

A. Malic acid and PEP

B. PGA and PEP

C. PGA and malic acid

D. PGA and phosphoglycolate

Answer: D

Watch Video Solution

32. Number of cell organelle(s) involved in photorespiration is/are

A. One

B. Two

C. Three

D. Four

Answer: C

Watch Video Solution

33. $PEPcase$ is associated with

A. C_3 plants

B. CAM plants

C. C_4 plants

D. Both B and C

Answer: D

Watch Video Solution

34. C_4 plants are also known as

A. Calvin type

B. Calvin-Bassham type

C. Hatch and Slack type

D. Emerson type

Answer: C

Watch Video Solution

35. Anatomy of C_4 plant leaf shows

A. Presence 0f peroxisomes

B. Presence of bundle sheath cells

C. Absence of mitochondria

D. Absence of bundle sheath cells

Answer: B

Watch Video Solution

36. ATP molecules required to synthesize one molecule of glucose by C_4, pathway are

A. 12

B. 18

C. 24

D. 30

Answer: D

Watch Video Solution

37. Photorespiration is favoured by

A. High oxygen and low carbon dioxide

B. High carbon dioxide and low oxygen

C. High temperature and low oxygen

D. High humidity and temperature

Answer: A

Watch Video Solution

38. First product of photorespiration is

A. Phosphoglycolate

B. Glycolate

C. Glycine

D. None of the above

Answer: A

Watch Video Solution

39. Photorespiration is affected by

A. Temperature

B. Light intensity

C. CO_2 and O_2

D. All of the above

Answer: D

Watch Video Solution

40. C_4 Plants differ from C_3 plants with respect to

A. First product

B. Substrate which accepts carbon dioxide

C. Number of ATP molecules consumed

D. All of the above

Answer: D

Watch Video Solution

41. In green cell the enzyme catalase is localised in

A. Peroxisomes

B. Chloroplasts

C. Lysosomcs

D. Vacuoles

Answer: A

Watch Video Solution

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

A. PEP carboxylase and pyruvate carboxylase respectively

B. PEP carboxylase and RuBP carboxylase respectively

C. RuBP carboxylase and pyruvate carboxylase respectively.

D.

Answer: C

Watch Video Solution

43. C_4 cycle was discovered in

A. Groundnut

B. Sugarcane

C. Chrysanthemum

D. Apple

Answer: B

Watch Video Solution

44. 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. Twelve

D. Zero

Answer: C

Watch Video Solution

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

A. Effective pumping of CO_2 into bundle sheath cells

B. RuBisCO in C_4 plants has higher affinity for CO_2

C. Four carbon acids are primary initial CO_2 fixation products

D. Primary fixation of CO_2 is mediated via PEP carboxylase

Answer: D

Watch Video Solution

Section A Topicwise Questions Topic 5 Factors Affecting Rate Of Photosynthesis Light Co 2

1. If a chemical process is affected by more than one factors, then its rate will be determined by the factor which is nearest to its minimum value, it is the factor which directly affects the process if its quantity is changed. This is the statement of

A. Hatch and Slack

B. Calvin and Bassham

C. Blackmans law of limiting factor

D. Lindemann's law of minimum

Answer: C

Watch Video Solution

2. Fill in the blanks

Light saturation ocuurs at â€¦.aâ€¦per cent of full sunlight.

2. There is aâ€¦.bâ€¦. Relationship between incident light and CO_2 fixation rates at low light intensities.

3. C_3 plants show saturation at about â€¦câ€¦μlL^{-1} while C_4 corresponds to saturation at about ....d....μlL^{-1}

A. a-2-5%, b-sigmoid, c- 350, d-460

B. a-50%, b-linear, c-460, d- 350

C. a-10%, b-sigmoid, c- 360, d-450

D. a-10%, b-linear, c-450, d- 360

Answer: D

Watch Video Solution

3. The current availability of CO_2 levels is limiting to the

A. C_3 plants

B. C_4 plants

C. CAM plants

D. Both A and B

Answer: A

Watch Video Solution

4. C_3 plants responds to higher CO_2 concentration by showing increased rates of photosynthesis leading to higher productivity has been used for some greenhouse crops such as

A. Tomato and black pepper

B. Tomato, lettuce and seedless cucumber

C. Beet and black pepper

D. Tomato and bell pepper

Answer: D

Watch Video Solution

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

A. O_2

B. CO_2

C. Chlorophyll

D. Light

Answer: A

Watch Video Solution

6. When day light hours are increased, the rate of photosynthesis

A. Increases

B. Decreases

C. Remains unchanged

D. None of the above

Answer: C

Watch Video Solution

7. Rate of photosynthesis is independent of

A. Intensity of light

B. Duration of light

C. Quality of light

D. Temperature

Answer: B

Watch Video Solution

8. During monsoon, the rice crop of eastern states of India shows lesser yield due to limiting factor of

A. CO_2

B. Light

C. Temperature

D. Water

Answer: B

Watch Video Solution

9. Ferredoxin is a constituent of

A. PS I

B. PS II

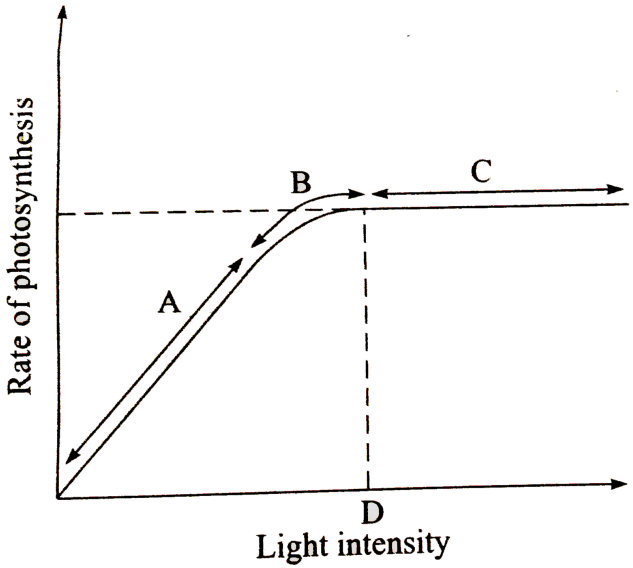
C. Hill reaction

D. P680

Answer: A

Watch Video Solution

10. Recognise the figure and find out the correct matching



a. At which point in the curve light is a limiting factor?

b. What do 'C' represent on the curve?

c. What do 'D' represent on the curve?

d. What do 'E' represent on the curve?

A. a- A, b-light saturation point, c-maximum rate of photosynthesis, d-factors other than light become limiting

B. a-B, b-maximum rate of photosynthesis, c- light saturation point, d-factors other than light become limiting

C. a- A, b-factors other than light become limiting, c-light saturation point, d-maximum rate of photosynthesis

D. a-A, b-factors other than light become limiting, c-maximum rate of photosynthesis, d-light saturation point

Answer: C

Watch Video Solution

11. What is trne about compensation point in C_3 and C_4 plants?

A. Compensation point of C_3 plants is higher

B. Compensation point of C_4 plants is lower

C. Both A and B

D. None of these

Answer: C

Watch Video Solution

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

A. Stroma of chloroplasts

B. Stroma of chloroplasts and mitochondria

C. Stroma of chloroplasts and peroxisomes

D. Grana of chloroplasts and peroxisomes

Answer: C

 Watch Video Solution

13. The first reaction in photorespiration is

A. Carboxylation

B. Decarboxylation

C. Oxygenation

D. Phosphorylation

Answer: C

Watch Video Solution

14. Law of limiting factor is

A. Law of maximum

B. Law of minimum

C. Law of optimum

D. All of the above

Answer: B

Watch Video Solution

15. Compensation point is

A. Beginning of photosynthesis

B. Little photosynthesis

C. Photosynthesis equal to rate of respiration

D. Neither photosynthesis nor respiration

Answer: C

Watch Video Solution

Section B Assertion Reasoning Questions

1. Assertion: Chlorophyll a is the chief pigment associated with photosynthesis.

Reason: In the blue and red regions of spectrum, there is maximum absorption by chlorophyll- a, also shows higher rate of photosynthesis

A. If both assertion and reason are true and the reason 1s the correct explanation of the assertion.

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: A

Watch Video Solution

2. Assertion: Accessory pigments enable a wider range of wavelength of incoming light to be utilised for photosynthesis.

Reason: Accessory pigments also protect chlorophyll a from photo-oxidation.

A. If both assertion and reason are true and the reason 1s the correct explanation of the assertion.

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B

Watch Video Solution

3. Assertion: PS I and PS II are named in sequence of their function during the light reaction or photochemical phase.

Reason: Each photosystem has one molecule of chlorophyll-a forming a light harvesting complex called antenna.

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

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: D

Watch Video Solution

4. Assertion: The whole scheme of transfer of electrons, starting from the PS II uphill to the acceptor, down the electron transport chain to PS I, excitation of electrons, transfer to another acceptor, and finally downhill to $NADP^+$ causing it to be reduced to $NADPH^+H^+$ ~iscal $\leq$ dtheZscheme or cyclicpho $\top$ hosph or ylation. H^(+)` are synthesised by this kind of electron flow.

A. If both assertion and reason are true and the reason 1s the correct explanation of the assertion.

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: D

View Text Solution

5. Assertion: Stroma lamellae have both PS I and PS II but the membrane of grana lack PS II as well as NADP reductase.

Reason: Cyclic photophosphorylation also occurs when only light of wavelength below 680 nm is available for excitation.

A. If both assertion and reason are true and the reason 1s the correct explanation of the assertion.

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: D

Watch Video Solution

6. Assertion: The NADP reductase enzyme is located on the stroma side of the membrane of thylakoid

Reason: During proton accumulation in lumen there is measurable decrease in pH in the stroma.

A. If both assertion and reason are true and the reason 1s the correct explanation of the assertion.

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: C

Watch Video Solution

7. Assertion: ATPase enzyme has two parts, One called the F_1 is embedded in the membrane of thylakoid and forms a transmembrane channel that carries out facilitated diffusion of proton across the membrane.

Reason: The other portion is called F_0 and protrudes on the thylakoid membrane on the side that faces the stroma

A. If both assertion and reason are true and the reason 1s the correct explanation of the assertion.

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: D

Watch Video Solution

8. Assertion: Chemiosmosis require a membrane, a proton pump, a proton gradient and ATPase.

Reason: The proton gradient is broken down due to movement of proton across the membrane to the lumen through the transmembrane channel of the F_0 of the ATPase.

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

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: C

Watch Video Solution

9. Assertion: Photorespiration is a wasteful process.

Reason: In photorespiratory pathway, there is not synthesis of sugars or ATP.

A. If both assertion and reason are true and the reason 1s the correct explanation of the assertion.

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: A

Watch Video Solution

10. Assertion: Productivity and yield are better in C_4 plants.

Reason: `C_(4)~ plants lacks photorespiration.

A. If both assertion and reason are true and the reason 1s the correct explanation of the assertion.

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: A

Watch Video Solution

11. Assertion: C_4 plants show tolerance to higher temperatures.

Reason: C_4 plants have both RuBisCO and PEPcase enzymes

A. If both assertion and reason are true and the reason 1s the correct explanation of the assertion.

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B

Watch Video Solution

12. Assertion: Tropical plants have a higher temperature optimum than the plants adapted to temperate climates.

Reason: The C_3 plants respond to higher temperatures while C_4 plants have a much lower temperature optimum

A. If both assertion and reason are true and the reason 1s the correct explanation of the assertion.

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: C

Watch Video Solution

13. Assertion: In green plants H_2O is the hydrogen donor and is oxidised to O_2

Reason: In the purple and green sulphur bacteria, the oxidation product is sulphur or sulphate depending on the organism and not O_2.

A. If both assertion and reason are true and the reason 1s the correct explanation of the assertion.

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B

Watch Video Solution

Section D Chapter End Test

1. Both respira

A. GOLGI BODY

B. WATER

C. CYTOCHROMES

D. SUNLIGHT

Answer: C

Watch Video Solution

2. the empirical formula for chlorophyll a is

Watch Video Solution

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

Watch Video Solution

4. Chlorophyll b is

Watch Video Solution

5. Th.: process of photosy,1thesis is

A. Reductive. exergonic and catabolic

B. Reductive, endergonic and catabolic

C. Reductive. exergonic and anabolic

D. Reductive, endergonic and anabolic

Answer: D

Watch Video Solution

6. Complete girdling ultimately kills the tree due to

A. Starvation of root

B. Stoppage of photosynthesis

C. Non-movement of minerals

D. Non-movement of water

Answer: A

Watch Video Solution

7. when cell ceonverts light energy into chemical energy, which of the following reaction would take place.

Watch Video Solution

8. Chief functions of leaves are

A. Transpiration and photosynth~s1s

B. Respiration and photosynthesis

C. Respiration and digestion .

D. Respiration and transpirat10n

Answer: A

Watch Video Solution

9. Synthesis of ADP+ Pi ~ ATP in grana photosynthesis is

A. Phosphorylation

B. Photophosphorylatton

C. Oxidative phosphorylation

D. Photolysis

Answer: B

Watch Video Solution

10. the number of chlorophyll molecules in a quantasome id

Watch Video Solution

11. Algae often float on surface of water during day but sink down during night due to

A. Evolution and trapping of oxygen bubbles during the clay in their photosynthesis

B. Becoming light as they consume most of their food in the night

C. Warming action of sun during the day

D. Re lease of absorbed air by warming of water

Answer: A

Watch Video Solution

12. The size of chlorophyll molecule is

Watch Video Solution

13. Which is correct about chlorophyll a and b in leaves of higher plants?

A. Both are present in equal proportion

B. Chlorophyll a is more than chlorophyll b

C. Chlorophyll a is less than chlorophyll b

D. Chlorophyll b is ten times more than chlorophyll a

Answer: B

View Text Solution

14. Cytochromes are

A. O_2acceptors

B. H_2 acceptors

C. Electron acceptors

D. H_2O acceptors

Answer: C

Watch Video Solution

15. Formation of ATP in photosynthesis and respiration is an oxidation process which utilises the energy from

A. Cytochromes

B. Ferridoxin

C. Electrons

D. Carbon dioxide

Answer: C

View Text Solution

16. Photosynthetic enhancement with flashing light was first observed by

A. Benson and Calvin

B. Hill and Calvin

C. Hatch and Slack

D. Emerson and Arnold

Answer: D

View Text Solution

17. PS II contains a non-chlorophyllous pigment in blue-green algae

A. β-carotene

B. Zeaxanthin

C. Phycocyanin

D. xanthophyll

Answer: C

Watch Video Solution

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

Or

Which was first photosynthesis organism

A. Purple sulphur bacteria

B. Cynaobacteria

C. Purple non-sulphur bacteria

D. Green sulphur bacteria

Answer: B

Watch Video Solution

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

A. Hill

B. Calvin

C. Blackman

D. Emerson and Arnold

Answer: D

Watch Video Solution

20. At high oxygen concentration, the rate of photosynthesis decreases due to

A. Warburg effect

B. Pasteur effect

C. Emerson effect

D. Richmond Lang effect

Answer: A

Watch Video Solution

21. the most effective wavelength of light participating in photosynthesis is

A. Green

B. Violet

C. Red

D. Yellow

Answer: C

Watch Video Solution

22. If plants stop photosynthesis which gas will disappear?

A. CO_2

B. N_2

C. O_2

D. NH_3

Answer: C

Watch Video Solution

23. Plants are removed from patit'nt 's room duri ng night because

Watch Video Solution

24. In a CAM plant the concentration of organic acid

A. Decreases during night

B. Increases during day

C. Increases during night

D. Both A and B

Answer: C

Watch Video Solution

25. In CAM plants, CO_2 required for photosynthesis enters the plant during

A. Daytime when stomata are open

B. Night when stomata are open

C. Night when hydathodes are open

D. Daytime through lenticels

Answer: B

View Text Solution

26. Maximum photosynthesis occurs in

A. Blue light

B. Red light

C. Green light

D. White light

Answer: D

View Text Solution

27. Match the columns and choose the correct option.

	Column I		Column II
a.	Visible light	i.	0.1–1.0 nm
b.	Ultravoilet	ii.	400–700 nm
c.	*X*—rays	iii.	Longer than 700 nm
d.	*Infrared*	iv.	100–400 nm

View Text Solution

28. Plants showing C_4 photosynthesis have

A. Granai bundle sheath chl oroplasts and agranal mesophyll chl oroplasts

B. Agranal bundle sheath chl oroplasts and granal mesophyll chloropl asts

C. Both bundle sheath and mesophyll chloroplasts are agranal

D. Both the types of chloroplasts are granal.

Answer: B

Watch Video Solution

29. In photorespiration, what is the role of peroxisome

A. Synthesis of PGA

B. Reduction of gl yoxylate

C. Oxidation of glycolate

D. Oxygenati on of glycolate

Answer: C

Watch Video Solution

30. CAM pla nts be long to family by

A. Malvaceac

B. Crassulaceae

C. Trapaceae

D. Orchidaceae

Answer: B

View Text Solution

31. Succelent performs CO_2 fixation by

A. CAM pathway

B. C_4pathway

C. C_3pathway

D. C_2pathway

Answer: A

View Text Solution

32. DCMU inhibits

A. PS II

B. PS I

C. Destroys chl oroplast

D. Inhibits oxidative phosphorylation

Answer: A

Watch Video Solution

33. Ammonia is produced during

A. Photorespiration

B. CAM

C. Dark respiration

D. All of the above

Answer: A

View Text Solution

34. NAD^+ is reduced in photorespiration inside

A. Mitochondria

B. Mitochondria and peroxisome

C. Mitochondria and chloroplasts

D. Chloroplasts and peroxisomes

Answer: A

View Text Solution

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

A. 3-PGA

B. Malic acid

C. Oxaloacetic acid

D. Pyruvate

Answer: B

Watch Video Solution

36. Phytol chain is present in

A. Carotenoids

B. Phycocyanin

C. Chlorophyll

D. Haemoglobin

Answer: C

View Text Solution

37. Which one is important in electron transport system ?

A. Ubiquinone

B. Acetyl CoA

C. TricarboxyJic acid

D. Ferricyanide

Answer: A

Watch Video Solution

38. Which of the following is the most common H^+ acceptor?

View Text Solution

39. Crabohydrates, the most abundant biomlecles on earth, are produced by

A. Some bacteria, algae and green plants

B. Fung algae and green plants

C. All bacteria, fungi and algae

D. Vimses, fungi and bacteria

Answer: A

Watch Video Solution

40. As compared to sun plants, plants adapted to low light intensity possess

A. High rate of CO_2 fixation

B. Larger photosynthetic units

C. More extended root system

D. Spiny leaves

Answer: B

Watch Video Solution

41. How many molecules of glycine are required to re lease one molecule of CO_2, in photorespiration?

A. One

B. Two

C. Three

D. Four

Answer: B

Watch Video Solution

42. Plants living in hot humid environment are

A. C_3 plants

B. CAM plants

C. C_4 plants

D. All of the above

Answer: C

View Text Solution

43. Maximum photosynthesis occurs in light

A. Red

B. Green

C. Very high light

D. Continuous light

Answer: D

View Text Solution

44. Which ones are primarily absorbed by carotenoids?

A. Blue and green

B. Green and red

C. Red and violet

D. Violet and blue

Answer: D

Watch Video Solution

45. Photoautotrophs lacking chlorophyll a are

A. Cyanobacteria

B. Red alge

C. Brown algae

D. Bacteria

Answer: D

Watch Video Solution

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

A. PGAL/GAP

B. PGA

C. 2-carboxy 3-keto, 1,5-bisphosphoribotol

D. DiHAP

Answer: C

Watch Video Solution

47. What percentage of usable radient energy energy entering a reaction site of photosynthesis is converted to potential energy

A. 0.1

B. 0.35

C. 0.2

D. 0.42

Answer: B

Watch Video Solution

48. In photosynthesis, energy for passage of electron is the one That is absorbed by

A. Chlorophyll

B. RuBP

C. Water

D. ATP

Answer: A

Watch Video Solution

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

A. ADP

B. ATP

C. Chlorophyll

D. RuBP

Answer: B

Watch Video Solution

50. Which one of the following contain agranal chloroplasts?

A. C_3 plants

B. Succulents

C. C_4 plants

D. Hydrophytes

Answer: C

View Text Solution

Others

1. Which ones are correct?

Photosynthetic ATP synthesis is called photophosphorylation.

Kranz anatomy occurs in leaf

Reduction in NADP to NADPH occurs during Calvin cycle.

Magnesium occurs in phytol tail of chlorophyll.

A. a, b correct

B. c, d correct

C. a, c correct

D. a, d correct

Answer: A

Watch Video Solution

2. Law of limiting factors in photosynthesis was given by:

A. R. Hill

B. Calvin

C. Krebs

D. Blackman

Answer: D

Watch Video Solution

3. In C_4 plants, the bundle sheath cells

A. Have thin walls to facilitate gaseous exchange

B. Have large intercellur space

C. Have a high densily of chloroplasts

D. Are rich in PEP carboxylase

Answer: C

Watch Video Solution

4. In chorophyll, structure four pyrrole ring are united with Mg by their atoms of

A. C

B. H

C. O

D. N

Answer: D

Watch Video Solution

5. Stomata of CAM plants

A. Are always open

B. Open during day and close at night

C. Open during night and close during day

D. Never open

Answer: C

Watch Video Solution

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

A. England

B. Australia

C. America

D. New Zealand

Answer: B

Watch Video Solution

7. Fixation and reduction of CO_2 requires

A. ATP

B. NADPH, cholrophyll, water

C. ATP,NADPH

D. ATD,NADPH and light

Answer: C

Watch Video Solution

8. In C_3 plants, photosynthesis occur in

A. Bundle sheath cells

B. Peroxisomer

C. Mesophyll cells

D. Kranz anatomy

Answer: C

Watch Video Solution

9. H_2 donor during photosynthesis is

A. NADH

B. ATP

C. NADP

D. NADPH

Answer: D

Watch Video Solution

10. Rate of photosynthesis is higher in

A. Very high light

B. Red light

C. Green light

D. Continous light

Answer: D

View Text Solution

11. Which pigment of the plant takes part in light reaction of potosynthesis

or

Which pigment is present universally in all green plants

A. Xanthophyll

B. chl a

C. Carotene

D. Phycoxanthin

Answer: B

Watch Video Solution

12. Read the following four statement A,B,C and D and select the right opition having both correct statements.

statements

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

(B) Omly PS I is functional in cyclic photosporylation

(c) Cyclic photophosphorylation results into synthesis of ATP and $NADPH_2$

(D) Stroma lamllae lack PSII as welll as NADP

A. b and c

B. a and b

C. b and c

D. c and d

Answer: A

Watch Video Solution

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

A. Gymnosperms

B. Angiosperms

C. Alga

D. Bryophyte

Answer: C

Watch Video Solution

14. The C_4 plants are photosynthesis more efficient then C_3 plant because

A. CO_2 efflux is not prevented

B. They have more choloroplasts

C. CO_2 compensation point is more

D. CO_2 generated during photorepiration is recycled throught PEP carboxylase

Answer: B

Watch Video Solution

15. How many ATP and NADPH molecuels are respectively required to mae one molecule of glucose through Calvin cycle?

A. 2 ATP+ 1 $NADPH_2$

B. 3 ATP + $2NADPH_2$

C. 2 ATP + 3 $NADPH_2$

D. 3 ATP + $3NADPH_2$

Answer: B

Watch Video Solution

16. The creation of proton geadient across the thyakoid membrane is a result of

A. Decrease in proton number in stroma

B. Decrease in pH in the lumen

C. Accumulation of protons in the lumen

D. All of the above

Answer: D

Watch Video Solution

17. Loss of water in C_4 plants as compared to C_3 plants for the same amount of CO_2 fixed is

A. Double

B. One third

C. One fourth

D. Half

Answer: D

Watch Video Solution

18. Reaction centre of PS I is ___ and reaction centre of PS II is___

A. P_{700}

B. P_{680}

C. Ch_{715}

D. Chl_{685}

Answer: A

Watch Video Solution

19. Isotope of oxygen used in studying photolysis is

A. ^{16}O

B. ^{15}O

C. ^{17}O

D. ^{8}O

Answer: D

Watch Video Solution

20. How many Calvin cycle form one hexose molecule

A. 2

B. 4

C. 6

D. 8

Answer: C

Watch Video Solution

21. Which one is a CAM plant?

A. Maize

B. Pineapple

C. Onion

D. Pea

Answer: B

Watch Video Solution

22. Chloroplasts without grana are known to occur in

A. Bundle sheath cells of C_3 plants

B. Bundle sheath cells of C_4 plants

C. Mesophyll cells of all plants

D. Mesophyll cells of C_4 plants

Answer: B

Watch Video Solution

23. Warburg effect is decrease in the rate of photosynthesis at

A. Low carbon dioxide concentration

B. High oxygen content

C. High carbon dioxide concentration

D. Both A and B

Answer: B

Watch Video Solution

24. Malic acid is formed in C_4 plants in the cell of

A. Epidermis

B. Bundle sheath

C. Phloem

D. Mesophyll

Answer: D

Watch Video Solution

25. In C_4pathway, RuBP accepts CO_2 inside

A. Xylem parenchyma

B. Pholem parencyma

C. Mesophyll cells

D. Bundle sheath cells

Answer: D

Watch Video Solution

26. In C_4 pathway, RuBP receives CO_2 from

A. Pyruvic acid

B. PEP

C. OAA

D. Malic acid

Answer: D

View Text Solution

27. Product of photorespiration is

A. Phosphoglyceratc

B. Erythrose 4-phosphate

C. Dilhydroxy acetone 3-phosphate

D. All of the above

Answer: A

View Text Solution

28. Chlorophyll appears green due to

A. Absorption of green light

B. Red fluorescence

C. Green fluoresecense

D. Absorption of red blue light

Answer: D

Watch Video Solution

29. Last electron acceptor of PS I is.

A. Ferredoxium

B. Cyt b_6

C. Plastocyanin

D. Plastoquinone

Answer: C

Watch Video Solution

30. Free radical has electron

A. Unparied and extermely

B. Paried and extermelu inactive

C. Unapaired and extremely inactive

D. Parired and extremely reactive

Answer: A

Watch Video Solution

31. In which cells of leaf, pyruvate is converted to PEP in C pathway?

A. Epidermals cells

B. Mesophyll cells

C. Bundle sheath cells

D. Guard cells

Answer: B

Watch Video Solution

32. Which organelle out of these does not participate in photorespiration?

A. Peroxisomer

B. Lysosomes

C. Mitochondria

D. Chloroplasts

Answer: B

Watch Video Solution

33. Sunken stomata are usually found in

A. Phanerogams

B. C_3 Plants

C. CAM plants

D. Insectivorous plants

Answer: C

View Text Solution

34. Plants requiring low light intensity for optimum photosynthesis is called:

A. Bryophytes

B. Pteridophytes

C. Heliophytes

D. Sciophytes

Answer: D

Watch Video Solution

35. A reduction in O_2 evolution occurs when light wavelength

A. More than 680 nm

B. Less than 680 nm

C. Less than 660 nm

D. 560

Answer: A

Watch Video Solution

36. In the absence of $NADP^+$, electrons of photonsythetic electron transport system pass to

A. Cyt.f

B. Cyt. b_6

C. Plastocyanin

D. Quinine

Answer: B

Watch Video Solution

37. RuBisCo occurs in high quantity as it is

A. An oxygenase

B. Catalysing reversible reaction

C. Degraded rapidly

D. Very slow acting enzyme

Answer: D

Watch Video Solution

38. Light reaction in stroma lamellae of chloroplast results in the production of

A. ATP

B. $NADPH_2$

C. ATP+ NADPH

D. O_2

Answer: A

Watch Video Solution

39. Electron energy is used to drive protons against concentration gradient across thylakoid membrance into

A. Stroma lamella

B. Thylakoid lurnen

C. Stroma

D. Interthylakoid space

Answer: B

Watch Video Solution

40. Formation of phosphoglyde phosopholyceric acid is

A. Hydrolysis

B. oxidation

C. Reduction

D. Electrolysis

Answer: C

Watch Video Solution

41. Rate of photosynthesis is maximum in

A. Orange light

B. Yellow light

C. Blue light

D. Green light

Answer: C

Watch Video Solution

42. Optimum temperature for photosynthesis is

A. $35^\circ - 40^\circ C$

B. $25^\circ - 35^\circ$

C. $20^\circ - 25^\circ C$

D. $10^\circ - 15^\circ C$

Answer: C

Watch Video Solution

43. Which is related to light reaction of photosynthesis?

A. In PS II light reaction centre is P_{700}

B. In PS I light reaction centre is P_{680}

C. Photolysis is associated with PS I

D. PS I and PS II are associated in Z-scheme.

Answer: D

View Text Solution

44. Presence of bundle sheath is characteristic of

A. C_4 Plants

B. Xerophytic plants

C. Grass family

D. C_3 plants

Answer: A

View Text Solution

45. CAM helps the plants in

A. Disease resistance

B. Reproduction

C. Conserving water

D. Secondary growth

Answer: C

Watch Video Solution

46. In kranz anatomy, the bundle sheath cells have

A. Thick walls, many intercellular spaces and no chloroplasts

B. Thick walls, no intercellular spaces and large number of chloroplasts

C. Thick walls, no intercellular spaces and few chloroplasts

D. Thin walls, many intercellular spaces and several chloroplasts

Answer: B

Watch Video Solution

47. Which one of the following is correct?

A. C_4 plants are more efficient than C_3 plants

B. C_3 plants are more efficient than C_4 plants

C. Photorespiration is useful process

D. Photorespiration is absent in C_3 plants

Answer: A

Watch Video Solution

48. the first step in photosynthesis is the

A. Joining of 3-carbon atom to form Glucose

B. Formation of ATP

C. Ionization of water

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

Answer: D

Watch Video Solution

49. The isotope of carbon used extensively for studies in Photosynthesis is

A. C^{12}

B. C^{14}

C. C^{18}

D. C^{13}

Answer: B

Watch Video Solution

50. Cyclic photophosphorylation is carried out by

A. PS I only

B. PS II only

C. Both A and B

D. Photolysis and PS II

Answer: A

Watch Video Solution

51. Photosystem II occurs in

A. Stroma

B. Cytochrome

C. Grana thylakoids

D. Mitochondrial surface

Answer: C

View Text Solution

52. Photo-oxidation of water results in the fomation of

A. H^+, o_2, ATP

B. H^+, O_2, e^-, ATP

C. H^+, O_2, e^-

D. Non of the above

Answer: C

Watch Video Solution

53. Melvin Calvin was professor of

A. Botany

B. Plant physiology

C. Biochemistry

D. Chemistry

Answer: D

Watch Video Solution

54. 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

Watch Video Solution

55. During Calvin cycle the total number of CO_2, ATP and NADPH molecules uitlized abd glucose, ADP and NADP molecules generated is

A. 31

B. 36

C. 61

D. 67

Answer: D

Watch Video Solution

56. The chemical composition of chlorophyll and carotenoids was given by

A. Senebier

B. Mayer and Anderson

C. Rober Mayer

D. Willstatter and stoll

Answer: D

Watch Video Solution

57. Which of wrongly matched ?

A. Joseph Priestley- Showed that plants release O_2

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

C. Sachs-Plants produce glucose/starch

D. Engelmann-Green substance is located within special bodies in plants

Answer: D

Watch Video Solution

58. Which of the following statements regarding C_4 pathway is false

A. The primary CO_2 acceptor is PEP

B. Bundle sheath cells contain PEP case

C. Enzyme for CO_2 Fixation is PEP case

D. Mesophyll cells leack RuBisCO

Answer: B

Watch Video Solution

59. Which statements about photosynthesis are correct ?

First CO_2acceptor in C_4 cycle is PGA

(b) In C_3 Plants , first stable product of photosynthesis is RuBP

(c) Oxygen liberated during photosunthesis 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 a correct

Answer: C

Watch Video Solution

60. Photorepiration produces

A. sugar but not ATP

B. ATP but no sugar

C. Both ATP and sugar

D. Neither ATP nor sugar

Answer: D

Watch Video Solution

61. Which of the following is associated with electron transport in photosynthesis

A. Sodium

B. Potassium

C. Iron

D. Cobalt

Answer: C

Watch Video Solution

62. The substrate for photorespiration is

A. Phosphoglyceric acid

B. Glycolate

C. Serine

D. Glycine

Answer: B

Watch Video Solution

63. Kranz anatomy is typical of

A. C_4 plants

B. C_3 plants

C. C_2 Plants

D. CAM plants

Answer: A

Watch Video Solution

64. Organelles having enzymes involved in photorespriation is are

A. Mitochondria. chloroplasts and ribosomes

B. Mitochondria, peroxisomes and chloroplasts

C. Mitochondria, nucleus and ribosomes

D. Mitochondria. peroxisomes and glyoxysomes

Answer: B

Watch Video Solution

65. Photorespiration involves oxidation of

A. Chlorophyll

B. PGA

C. RuBP

D. Both B and C

Answer: C

Watch Video Solution

66. C_4 Plants have higher net photosynthesis rate as they have

A. No photorespirations

B. PEP as CO_2 acceptor

C. Kranz anatomy

D. Photosynthesis even at low light intensity

Answer: A

Watch Video Solution

67. Excitation of chlorophyll by light is

A. Exergonic reaction

B. Anabolic reaction

C. Photochemical reaction

D. Photooxidation reaction

Answer: C

Watch Video Solution

68. The range of wavelength of the visible light is

A. 200-400 nm

B. 400-700 nm

C. 700-900 nm

D. 100-200 nm

Answer: B

Watch Video Solution

69. A few normal seedlingd of tomato were kept in a dark room. After a few days were found to have become white coloured like albinos. Ehich of the following terms will you use to describe them

A. Defoliated

B. Mutated

C. Enbolised

D. Etiolated

Answer: D

Watch Video Solution

70. Chemiosmotic mechanism of ATP synthesis was proposed by

A. Fredrick Losch

B. Felix Dujardin

C. Peter Mitchell

D. Carl Landsteiner

Answer: C

Watch Video Solution

71. In photosynthesis, the light-independent reactions take place at

A. Photosystem I

B. Photosystem II

C. Stromal matrix

D. Thylakoid lumen

Answer: C

View Text Solution

72. Bundle sheath cells around the vascular bundles in C4 plant are characterized by

A. Few chloroplasts, thick cell walls and no intercellular spaces

B. Large number of chloroplasts, thin cell walls and no intercellular spaces

C. Large number of chloroplasts, thick cell walls and no intercellular spaces

D. Few chloroplasts, thick cell walls and intercellular spaces

Answer: C

Watch Video Solution

73. In photosynthesis ,P_{680} refers to

A. Reaction center of photosystem I

B. Antennae molecules complex

C. Reaction center of photosystem II

D. Complete light harvesting complexes

Answer: C

Watch Video Solution

74. Emerson ' s enhancement effect and Red drop have been instrumental in the discovery of

A. Photophosphorylation and non-cyclic electron transport

B. Two photosystems operating simultaneously

C. Photophosphorylation and cyclic electron transport

D. Oxidative phosphorylation

Answer: B

Watch Video Solution

75. 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

Watch Video Solution

76. 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 followubg physiological groups would you assign this plant

A. C_3

B. C_4

C. CAM

D. Nitrogen fixer

Answer: B

Watch Video Solution

77. Phytochrome is

A. Lipoprotein

B. Chromoprotein

C. Flavoprotein

D. Glycoprotein

Answer: B

Watch Video Solution

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

A. C_3 plants respond to higher temperatures with enhanced photosnthesis while C_4 plants have much enhanced photosynthesis wtule lower temperature optimumÂ·

B. Tomato is a greenhouse crop which can be grown in CO_2 enriched atmosphere for higher yield .

C. Tomato is a greenhouse crop which can be grown in Co_2- enriched atmosphere for higher yield.

D. Light saturation for CO_2 fixation occurs at 10 % of full sunlight .

Answer: B

Watch Video Solution

79. PEP is primary CO_2 acceptor in

A. C_4 plants

B. C_2 plants

C. C_3 and C_4 plants

D. C_3 Plants

Answer: A

Watch Video Solution

80. Which of the following is not a product of light reaction of phtosynthesis

A. ATP

B. NADH

C. NADPH

D. Oxygen

Answer: B

Watch Video Solution

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

A. respiration

B. transpiration

C. photorespiration

D. photosynthesis

Answer: D

Watch Video Solution

82. Hill reaction occurs in

A. high altitude plants

B. total darkness

C. absence of water

D. presence offerricyanide

Answer: A

Watch Video Solution

83. Photorespiration in C_3 plants starts from

A. phosphoglycerate

B. phosphoglycolate

C. glycerate

D. glycine

Answer: A

Watch Video Solution

84. What is PAR range?

A. 200 nm-800 nm

B. 400 nm-700 nm

C. 350 nm-550 nm

D. 600 nm-100 nm

Answer: B

Watch Video Solution

85. Through the use of oxygen-18 (heavy oxygen), scientists have found that the oxygen released during photosynthesis comes from molecules of

A. carbon dioxide

B. water

C. glucose

D. chlorophyll

Answer: B

Watch Video Solution

86. Select the incorrect statement

A. C_4 pathway for CO_2 fixation were discovered by Hatch and Slack

B. CO_2 is essential for photosynthesis

C. Addition of sodium carbonate in water retards photosynthetic rate in vallisneria

D. Phloen is the principal pathway for translocation of solutes

Answer: C

Watch Video Solution

87. The family in which many plants are C_4 type

A. Malvaceae

B. Solanaceae

C. Crucifereae

D. Graminae

Answer: D

Watch Video Solution

88. Which one does not differ between a C_3 and a C_4 plant ? I Initial CO_2 acceptor

Extent of photorespiration

Enzyme catalyzing reaction that fixes CO_2

Presence of Calvin cycle

Leaf anatomy

A. I and V

B. IV

C. II and III

D. IV

Answer: B

Watch Video Solution

89. The First carbon dioxide fixation products of C_4 plants is

A. oxaloacetic acid

B. ribulose biphosphate

C. phosphoenol pyruvate

D. phosphoglyceric acid

Answer: A

Watch Video Solution

90. Carbon dioxide is necessary for photosynthesis. The chemical used to remove this gas most effectively from entering a control apparatus is

A. calcium oxide

B. distilled water

C. potassium hydroxide solution

D. sodium carbonate

Answer: A

Watch Video Solution

91. Calvin cycle takes place in

A. Only C_3 plant

B. Only C_4 plant

C. Both C_3 and C_4 plant

D. Neither C_3 nor C_4 plant

Answer: C

Watch Video Solution

92. The site of Calvin cycle in C_4 plants is

A. parenchymentous cell

B. mesophyll cell

C. bundle sheath cell

D. bundle sheath cell

Answer: C

Watch Video Solution

93. Which of the following cell organelles is associated with photorespriation ?

A. Mitochondria

B. Peroxisome

C. Choloroplast

D. All of these

Answer: D

Watch Video Solution

94. Assertion : Bacterial photosynthesis occurs by utilizing wavelength longer than 700 nm.

Reason : Here reaction centre is $B-890$.

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

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

C.

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

Answer: B

Watch Video Solution

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

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

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

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

C.

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

Answer: B

Watch Video Solution

96. Assertion : Cyclis pathway of photosythesis first apperead in some eubacterial species.

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

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

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

C.

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

Answer: B

Watch Video Solution

97. Asserotion: C_4 photosynthetic pathway is more efficient than the C_3 pathway.

Reson : Photorespirationis suppressed in C_4 plants.

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

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

C.

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

Answer: A

Watch Video Solution

98. Assertion. The atmospheric concentration of CO_2 at which photosynthesis just compensates for resoiration is referred to as CO_2 compensation point.

Reason. CO_2-compensation point is reached when the amount of CO_2 uptake is less than that generated through respiration because the level of CO_2 is more than that required for achieving CO_2-compensation point.

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

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

C.

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

Answer: C

Watch Video Solution

99. Assertion. Under conditions of high intensity and limited CO_2 supply, photorespiration has a useful role in proteching the plants from photo-oxidative damage.

Reason. If enough CO_2 is not available to utilise light energy for carboxylation to proceed, the excess energy may not cause damage to plants

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

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

C.

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

Answer: C

Watch Video Solution

100. Assertion. Photosynthetically C_4 plants are less efficient than C_3 plants.

Reason. The operation of C_4 pathway requires the involvement of only bundle sheath cells

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

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

C.

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

Answer: D

Watch Video Solution

101. Assertion: Dark reaction is purely enzymatic reaction.

Reason: It occurs only in absence of light.

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

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

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

D. both are false

Answer: C

Watch Video Solution

102. Assertion: Dark reaction occurs only at night in the stroma of chloroplast

Reason: CO_2 fixation occurs only during C_3 cycle.

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

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

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

D. both are false.

Answer: C

Watch Video Solution

103. Assertion: Amaranthus and sugarcane are called as Hatch and Slack plants.

Reason: One glucose is fonned by fixation of 6 CO_2 in the plants.

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

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

C.

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

Answer: B

Watch Video Solution

104. Assertion: D.C.M.U. is a photosynthetic inhibitor.

Reason: D.C.M.U. inhibits a photolysis of water.

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

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

C.

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

Answer: A

Watch Video Solution

105. 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 assertion and reason are true and the reason is a correct explanation of the assertion

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

C.

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

Answer: D

Watch Video Solution

106. Assertion : Cyclis pathway of photosythesis first apperead in some eubacterial species.

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

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

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

C.

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

Answer: B

Watch Video Solution

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

Reason : Threemolecules of NADPH and two ATP are requird for fixatin of one molecule of CO_2

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

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

C.

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

Answer: C

Watch Video Solution

108. Assertion. In light reaction of photosynthesis, light is required for the functioning of PS I and PS II and Production of NADPH and ATP.

Reason. Dark reaction does not occur in light.

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

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

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

D. both are false

Answer: C

Watch Video Solution

109. 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 assertion and reason are true and the reason is a correct explanation of the assertion

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

C.

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

Answer: C

Watch Video Solution