Photosynthesis

1. Assertion (A): Photosynthesis is a physicochemical reaction ( )

Reason(R): In Photosynthesis atmospheric carbon dioxide is reduced

1) Both A and R are correct and R is the correct explanation of A.

2) Both A and R are correct but R is not the correct explanation of A.

3) A is true, R is false

4) A is false, R is true.

2. In half –leaf experiment ( )

1. CO_2 reduction do not take place 2. O_2 evolution do not occur

3. ATP, $NADPH_2$ cannot be synthesized 4. Sucrose forms in the plastids

3. Importance of light in the photosynthesis is discovered by ( )

1) Priestly 2) Ingenhousz 3) von Sachs 4) Engelmann

4. The reason for the absence of oxygen evolution in green sulphur bacterial photosynthesis is ( )

1. Water is not required for the photosynthesis in these bacteria

2. These are unaerobic bacteria

3. Hydrogen donor for reduction of CO_2 is not water.

4. Energy is insufficient in pigments.

5. When incident light is bright ( )

1. Chloroplasts arrange with their flat surfaces parallel to the walls

2. Chloroplasts arrange with their flat surfaces perpendicular to the walls.

3. Chloroplasts arrange randomly.

4. Some chloroplasts arrange with their flat surfaces parallel and some perpendicular to the walls.

6. Dark reactions take place during ( )

1. Night 2. In the absence of the light

3. In the presence of light 4. Night and day as they are biochemical

7. Colour of chlorophyll 'a' is ( )

1. Yellow green 2.Greenish brown 3. Greenish blue 4. Bluish green

8. Chlorophyll absorbs wavelengths of ( )

1. Green and red 2. Blue and red 3. Blue and yellow 4. Yellow and red

9. Accessory photosynthetic pigments in angiosperms are ( )

1. Xanthophylls & Carotenoids
2. Chlorophyll 'b' and Xanthophylls
3. Chlorophyll 'b', Xanthophylls & Carotenoids
4. Chlorophyll 'b' and Carotenoids.

10. False statement regarding photosynthesis ( )

I. It shows two different reactions- light and dark

II. Thylakoid membranes and stroma are required for photosynthesis

III. Only chlorophyll 'a' traps light energy

IV. Dark reactions depend on O_2, ATP and $NADPH_2$.

1. Night 2. II & III 3. III & IV 4. IV & I

11. Light reactions include ( )

A. Light absorption B. Water splitting C. Oxygen release D. Phosphorylation

E. $NADPH_2$ formation F. CO_2 reduction

1. A, B, C 2. B, C, D, E 3. A, C, D, E, F 4. A, B, C, D, E

12. Antennae of photo systems consisting of ( )

1. Chlorophyll 'a', 'b', Xanthophylls & Carotenoids
2. Chlorophyll 'b', Xanthophylls & Carotenoids
3. Chlorophyll 'a', Xanthophylls & Carotenoids
4. Xanthophylls & Carotenoids

13. Photo system II absorbs light energy at ( )

1. 680 nm 2. 440 nm 3. 550 nm 4. 700 nm

14. PS I and PS II are excited by light energy at ( )

1. Red and red 2. Blue and red
3. Red and blue 4. Blue and blue

15. 'Z' scheme is ( )

1. Movement of electrons from PS I to PS II
2. Movement of electrons from PS II to PS I
3. Movement of electrons from PS II to pheophytin to PS I to NADP
4. Movement of electrons from PS I to NADP to cytochrome b-f to PS II

16. Location of PS II in the membranes ( )

1. Towards stroma side 2. Throughout the membrane
3. In the stroma lamella 4. In the grana towards lumen side

17. If thylakoid membranes are exposed to light wave lengths beyond 680 nm, the product formed is ( )

1. O_2, ATP & $NADPH_2$ 2. ATP & $NADPH_2$ 3. Only O_2 4. Only ATP

18. During light reactions the first substance that get excited by PS II is ( )

1. Quinone 2. Cytochrome
3. Pheophytin 4. Plastocyanin

19. True statement regarding light reactions is/ are ( )

I. Ultimate acceptor protons is ATP

II. Electron transports in the membrane

III. Protons translocate across the membrane

IV. Electron movement towards PS I is uphill

1. I & II 2. II & III 3. III & IV 4. IV & I

20. Assertion (A): Cyclic electron transport takes place in stroma lamellae ( )

Reason(R): PS II and NADP reductase is absent in stroma lamellae

1) Both A and R are correct and R is the correct explanation of A.

2) Both A and R are correct but R is not the correct explanation of A.

3) A is true, R is false

4) A is false, R is true.

21. During sun light ( )

1. Acidity increases in the lumen
2. Stroma gains protons
3. $NADPH_2$ forms towards lumen side
4. PQ accepts electrons from Quinone and protons from lumen

22. Primary criteria for chemiosmotic hypothesis of ATP formation is ( )

1. ADP 2. NADP 3. Proton gradient 4. O_2 release

23. False statement regarding cyclic electron transport is ( )

1. $NADPH_2$ is produced 2. Source of electrons is water
3. Proton gradient would not develop 4. All the above

24. First stable substance formed in C_3 plants is ( )

1. Glyceraldehyde 3 phosphate 2) 3-phosphoglyceric acid
3. Dihydroxyacetone phosphate 4. Ribulose bisphosphate

25. Calvin's pathway of CO_2 fixation takes place in ( )

1. C_3 plants 2. C_4 plants 3. C_3 & C_4 plants 4. C_3, C_4 and CAM plants

26. Net gain of triose phosphates in the cytosol when 3 turns of cycles of Calvin takes is ( )

1. Two 2. One 3. Six 4. Twelve

27. 4carbon compound formed during CO_2 fixation in stroma is ( )

1. Erythrose 2. Sedoheptulose 3. Ribose 4. Fructose

28. For the reduction of single CO_2 molecule, the assimilatory power required is ( )

1. 2ATP & $2NADPH_2$ 2. 3ATP & 1 $NADPH_2$
3. 3ATP& $2NADPH_2$ 4. . 3ATP& $3NADPH_2$

29. For the formation of one molecule of Fructose-1-6 bisphosphate in stroma requires ( )

1) $2CO_2$, 4ATP, $4NADPH_2$. 2) $6CO_2$, 18ATP, $12NADPH_2$.
3) $2CO_2$, 6ATP, $4NADPH_2$. 4) $3CO_2$, 9ATP, $6NADPH_2$.

30. Anatomical differentiation of C_4 plants from C_3 plants is ( )

1. Mesophyll 2. Plastids
3. Bundle sheath 4. Vascular bundles

31. The primary CO_2 acceptor in C_4 plants is ( )

1. Ribulose bisphosphate 2. PEP carboxylase
3. Malic acid 4. Phospho enol pyruvic acid

32. The first stable substance formed during Hatch-Slack pathway is ( )

1. Oxalo acetic acid 2. Aspartic acid 3.Malic acid 4. Pyruvic acid

33. Starch formation takes place in the plants in ( )

1. Green mesophyll cells of C_3 plants 2. Green bundle sheath cells of C_4 plants
3. Every green cell of CAM plants 4. All the above

34. CO_2 is supplied to the starch synthesizing equipment of CAM plants by ( )

1. Atmosphere 2. Malic acid 3. Pyruvic acid 4. OAA

35. True statement regarding C_4 plants is ( )

I. CO_2 fixation takes place in both mesophyll and bundle sheath cells.

II. Light assimilatory power is produced in both mesophyll and bundle sheath cells.

III. Starch formation takes place in both mesophyll and bundle sheath cells.

IV.3 Carbon compounds are seen both mesophyll and bundle sheath cells.

1. I & II 2. II & III 3. I, II & IV 4. I, II. III & IV

36. The most abundant protein in the plant kingdom is ( )

1. PEP carboxylase
2. RUBISCO
3. GAP dehydrogenase
4. Triose phosphate isomerase

37. Product of RUBISCO activity as Oxygenase is ( )

1) 2 molecules of Phosphoglyceric acid
2) One molecule of GAP & One DHAP molecule
3) One molecule of PGA and One molecule of Phosphoglycolic acid
4) Two molecules of phosphoglycolic acid

38. True statement regarding Photorespiration ( )

1. ATP is synthesized
2. CO_2 is released
3. Starch forms
4. $NADPH_2$ is synthesized

39. Percentage of full sunlight at witch light saturation occurs is ( )

1. 60
2. 50
3. 30
4. 10

40. Best suited plants in desert conditions are ( )

1. C_3
2. C_4
3. CAM
4. C_4 and CAM

Photosynthesis---Key

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
2	**1**	**2**	**3**	**1**	**3**	**4**	**2**	**3**	**3**	**4**	**2**	**1**	**1**	**3**	**4**	**4**	**3**	**2**	**1**
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
1	**3**	**4**	**2**	**4**	**2**	**1**	**3**	**1**	**3**	**4**	**1**	**4**	**2**	**3**	**2**	**3**	**2**	**4**	**3**