Very Short Answer Type Questions

Q.1. Where are the photosynthetic pigments located in the chloroplast ?

Ans. Photosynthetic pigments are located in the thylakoid membrane

Q. 2. Where are the pigment located in photosynthetic bacteria ?

Ans. The pigments in photosynthetic bacteria are located in the folds of cell membrane.

Q. 3. What will happen if a plant is given only green light ?

Ans. If a plant is given only green light, no photosynthesis will occur. Green light is not absorbed by the photosynthetic pigments as it is reflected back as such.

Q. 4. Name the central element present in chlorophyll.

Ans. Magnesium is the central element in chlorophyll.

Q. 5. Which chlorophyll is termed as universal photosynthetic pigment ?

Ans. Chlorophyll $'a'$

Q.6. Name the photosynthetic pigment which can be converted to vitamin A.

Ans. β-carotene can be converted to vitamin A.

Q. 7. Mention the difference between the structis chlorophyll $'a'$ and chlorophyll $'b'$.

Ans. Chlorophyll 'a' has methyl (CH_3) group and Chlorophyll $'b'$, has an aldehyde (CHO) group.

Q. 8. What is the main function of Chlorophyll pigment ?

Ans. To absorb light of specific wavelength in the visible regions.

Q.9. A potted plant otherwise kept in sunlight, is shifted to monochromatic red light. Will the rate of photosynthesis increase, decrease or remain the same?

Ans. Decrease.

Q.10.What are chromatophores?

Ans. Chromatophores are pigment containing and light-reflecting cells or group of cells found in bacteria and wide range of animals.

Q.11.Name the two classes of pigments in bacteria.

Ans. The two classes of pigments in bacteria are:

(i) Bacteriochlorophyll (reddish purple pigment)

(ii) Bacterovirdin (green pigment).

Q.12.Name the organism used by Engelmann to study first action spectrum of photosynthesis

Ans. *Cladophora.*

Q. 13. Name the most abundant enzyme in the world ? [KVS Mumbai 2016]

Ans. RuBisCO

Q. 14. How many molecules of ATP and how many molecules of NADPH + H^+ are spent to fix three molecules of CO_2? [KVS Agra 2016]

Ans. Fixation of three molecules of CO_2 uses 9 ATP and 6 NADPH molecules in C_3 plants.In C_4 plants for fixation of 3 CO_2 molecules 15 ATP and 6 NADPH and 6 NADPH energy is equired.

Q. 15. What is the site of formation of glycoxylate from glycolate?

Ans. The site of formation of glyoxylate from glycolate is peroxisomes of mesophyll cells.

Q. 16. Why are the C_4 plants more efficient in picking up $CO_2$when it is found in low concentration.

Ans. The C_4 plants are more efficient in picking up CO_4 even when it is found in low concentration because of the high affinity of PEP.

Q. 17. Give two examples of C_4 plants.

Ans. (i) *Expiborbia*, **(ii)***Bougainvillea.*

Q. 18. What is assimilatory power ?

Ans. Chemical energy of ATP and reducing power of $NADPH_2$, are assimilatory powers.

Q. 19. In what form carbohydrates are translocated in plants ?

Ans. Carbohydrates are translocated in plants in the form of sucrose.

Q. 20. What is photon ? What is the term given to the energy contained in photon ?

Ans. Discrete partidles believed to be present in light are called photons. The energy contained in a photon is termed as quantum.

Q. 21. Why are the C, plants more affected by high temperatures ?

Ans. At high temperature C_3 plants are more affected because of increased affinity of RuBisCo to oxygen.

Q. 22. Name three cell organelles involved photorespiration.

Ans. Chloroplast, Mitochondria and Peroxisomes.

Q. 23. Name the CO_2 acceptor in C_4 cycle.

Ans. PEP (Phosphoenol Pyruvic acid).

Q.24. What are quantasomes ?

Ans. It is a distinct morphological structural unit in the thylakoid which embodies a photosynthetic unit.

Q. 25. A potted plant otherwise kept in sunlight,ih shifted to monochromatic red light Will the rate of photosynthesis increase, decrease or remain the same ?

Ans. Decrease.

Q. 26. Where is NADP reductase enzyme located ?

Ans. NADP reductase enzyme is located on the stroma side of the membrane.

Q. 27. How does the light beyond the saturation point affect photosynthesis?

Ans. Beyond the saturation point, an increase in incident light causes the breakdown of chlorophyll and a decreased process of photosynthesis.

Q. 28. What is Kranz anatomy ?

Ans. Kranz anatomy is the special structure of leaves in C_4 PLANTS (eg. maize) where the tissue equivalent to the spongy mesophyll cells is clustered in a ring around the leaf veins, outside the bundle-sheath cells.

Q. 29. Which compound acts as CO_2 acceptor in Calvin cycle ?

Ans. Ribulose-1-5-biphosphate, a 5-carbon compound is the acceptor of CO_2 in Calvin cycle.

Q. 30. Name the primary acceptor of carbon dioxide in C_3 and C_4 plants.

Ans. C_3 plants : 5 Carbon Ketose Sugar, Ribulose-1,5- bisphosphate (RuBP) C_4 plants: 3-Carbon molecule phosphoend pyruvate (PEP).

Q. 31. Name the hormones which increase and decrease the rate of photosynthesis.

Ans. Cytokinins and gibberellins increase and ABA decrease the rate of photosynthesis.

Q. 32. Why are transitional curves produced during low of limiting factor?

Ans. The transitional curves are produced because of the presence of a large number of green cells and numerous chloroplast in the cell.

Q. 33. Define light compensation point ?

Ans. The point in light intensity where no gaseous exchange occur during photosynthesis is called as light compensation point.

Q. 34. What is CO_2 compensation point ?

Ans. When CO_2 conc. is reduced, there comes a point at which illuminated plant stop absorbing CO_2 from the environment, it is known as CO_2 compensation point.

Q. 35. Name the first CO_2 fixation produced in C_4 plants.

Ans. Oxaloacetic acid (OAA)

Q. 36. What is Warburg effect?

Ans. At very high oxygen content, the rate of photosynthesis begins to decline in all plants, this phenomenon is called Warburg effect.

Q. 37. What is red drop ? **[Imp.]**

Ans. Red drop is the occasional fall in photosynthetic yield beyond red region of spectrum (Emersor 1943). This is also called Emerson effect.

Q. 38. What are antennae in photosystem ?

Ans. Antennae refers to all the pigments of the photosystem except the pigment molecule (Chl'a') that forms the reaction centre.

Q. 39. Where does calvin cycle takes place in (i) a C_3 plant and (i) a C_4 plant respectively.

Ans. (i) In a C_3 plant, it takes place in the mesophyll cells.

(ii) In a C4plant, calvin cycle takes place in the bundle sheath cells.