

## NEET : CHAPTER WISE TEST-11

**SUBJECT :- BIOLOGY**

**CLASS :- 11<sup>th</sup>**

**CHAPTER :- PHOTOSYNTHESIS IN HIGHER PLANT**

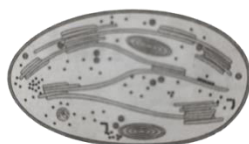
**DATE.....**

**NAME.....**

**SECTION.....**

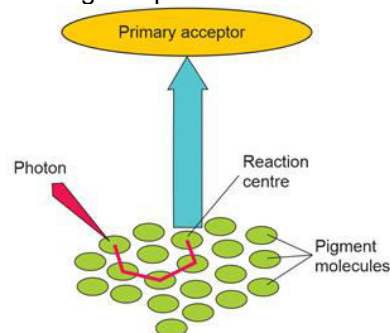
### (SECTION-A)

1. Photosynthesis is  
(A) Oxidoreductive process.  
(B) Anabolic process.  
(C) Endergonic process.  
(D) All of these.
2. Select the correct equation for photosynthesis. light  
(A)  $6\text{CO}_2 + 12\text{H}_2\text{O} \xrightarrow{\text{light}} \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{H}_2\text{O} + 6\text{O}_2$   
(B)  $6\text{CO}_2 + 6\text{H}_2\text{O} \xrightarrow{\text{light}} \text{CH}_6\text{O}_{12}\text{O}_6 + 12\text{H}_2\text{O} + 6\text{O}_2$   
(C)  $12\text{CO}_2 + 6\text{H}_2\text{O} \xrightarrow{\text{light}} \text{CH}_6\text{O}_{12} + 6\text{CO}_2 + 12\text{H}_2\text{O}$   
(D)  $6\text{O}_2 + 12\text{H}_2\text{O} \xrightarrow{\text{light}} \text{CH}_6\text{O}_{12}\text{O}_6 + 6\text{H}_2\text{O} + 6\text{O}_2$
3. Photosynthesis process was first discovered by  
(A) Priestley. (B) Ingenhousz  
(C) Engelmann. (D) Blackman.
4. Which of the following experiment showed that  $\text{CO}_2$  is essential for photosynthesis?  
(A) Moll half-leaf experiment  
(B) Priestley's experiment  
(C) Inverted funnel experiment  
(D) Variegated leaf experiment
5. What is the oxidation product when  $\text{H}_2\text{S}$  is used as the hydrogen source for photosynthesis in purple and green sulphur bacteria?  
(A) Oxygen (B) Sulphur  
(C)  $\text{CO}_2$  (D) Nitrogen
6. Isotopes employed to study the photosynthetic reaction are  
(A)  $\text{S}^{35}$  and  $\text{P}^{32}$  (B)  $\text{C}^{14}$  and  $\text{O}^{18}$   
(C)  $\text{N}^{14}$  and  $\text{CO}^{60}$  (D)  $\text{N}^{14}$  and  $\text{C}^{14}$
7. Study the following figure and select the incorrect statement



- (A) It shows clear-cut division of labour.
- (B) It has membranous system for trapping sunlight
- (C) Align themselves along the wall of mesophyll cells.
- (D) Has light-independent non-enzymatic reactions for  $\text{CO}_2$  fixation.

8. The plants growing in the dark show yellowing in leaves and long internodes. This condition is called  
(A) Chlorosis. (B) De-chlorosis.  
(C) Etiolation. (D) Dark effect.
9. The very first event in photosynthesis is  
(A) Photoexcitation of chlorophyll molecule.  
(B) Splitting of water molecule.  
(C) Photophosphorylation.  
(D) Reduction of  $\text{NADP}^+$
10. Which of the following are formed during light reaction in  $\text{C}_3$  plants?  
(A) Hydrogen,  $\text{O}_2$ , and sugar  
(B) ATP, reducing power, and oxygen  
(C) ATP, reducing power, and  $\text{CO}_2$   
(D) Hydrogen, reducing power, and sugar
11. Light reactions in green plants include all, except molecule.  
(A) Photoexcitation of chlorophyll  
(B) Water splitting reaction.  
(C) Reduction of  $\text{CO}_2$   
(D) Generation of ATP and NADPH.
12. Oxygen evolving complex  
(A) Is associated with the reaction centre of PS II.  
(B) Is located on the inner side of thylakoid membrane.  
(C) Requires Mn, Ca, and Cl.  
(D) All of these.
13. The given figure represents the light-harvesting complex.



- Select the incorrect statement with respect to LHC.
- (A) Made up of hundreds of pigment molecules.
  - (B) Consists of accessory pigments, including one molecule of chlorophyll a.
  - (C) Harvest different wavelengths of light.
  - (D) Help to make photosynthesis more efficient.

14. Removal of LHC from the photosystem  
 (A) Will reduce the photosynthetic efficiency.  
 (B) May stop the photosynthetic process.  
 (C) Plant may appear non-green due to different reflections.  
 (D) All of these.
15. In ETS, the movement of electron is downhill in terms of redox potential scale, i.e.  
 (A) Low to high potential.  
 (B) High to low potential.  
 (C) Low to low potential.  
 (D) High to high potential.
16. Z scheme is  
 (i) Cyclic photophosphorylation.  
 (ii) Noncyclic photophosphorylation.  
 (iii) Proposed by P. Mitchell.  
 (A) Only (i)  
 (B) Only (ii)  
 (C) Both (i) and (ii)  
 (D) Both (ii) and (iii)
17. Which of the following does not participate when the light-dependent phase yields only ATP as power? assimilatory  
 (A) Cytochrome  $b_6f$  complex  
 (B) Ferredoxin  
 (C)  $P_{700}$   
 (D) NADP reductase
18. Chemiosmotic hypothesis  
 (A) Was experimented by P. Mitchell.  
 (B) Proves that proton gradient is required for ATP synthesis.  
 (C) Explains how ATP is synthesised in chloroplast and mitochondria.  
 (D) All of these.
19. Breakdown of proton gradient across the thylakoid membrane is due to  
 (A) Removal of protons from stroma by NADP reductase.  
 (B) Active transport of protons through  $F_0$  part.  
 (C) Diffusion of protons through transmembrane channel  
 (D) Pumping of proton through  $F_1$  part.
20. How many of the given statements is/are correct for cyclic phosphorylation?  
 (I) Only PS I is functional.  
 (II) Occurs in stroma lamellae.  
 (III) Occurs when only light of wavelength less than 680 nm is available for excitation.  
 (IV) Synthesis of both ATP and NADPH occurs.  
 (V) Electrons are circulated within the photosystem.  
 (A) Three (B) Four  
 (C) Two (D) One
21. Photosystem I (PSI) and photosystem II (PS II) are named  
 (A) In the sequence of their discovery.  
 (B) In the sequence in which they function during photochemical reaction.  
 (C) In the sequence of their positions.  
 (D) In the sequence of electron transfer.
22. During photosynthesis, electrons are continuously lost from the reaction centre of PS II. What source is used to replace these electrons?  
 (A)  $H_2O$  (B)  $CO_2$   
 (C) Sugar (D) Light
23. Photophosphorylation in a chloroplast is most similar to which of the following mitochondrial reactions?  
 (A) Substrate-level phosphorylation  
 (B) Oxidative phosphorylation  
 (C) Hydrolysis  
 (D) EMP pathway
24. During the light reaction of photosynthesis, which of the following phenomenon is observed in cyclic and noncyclic photophosphorylation?  
 (A) ATP formation  
 (B) Splitting of water molecule  
 (C) Reduction of  $NADP^+$   
 (D) Involvement of both PS I and PS II
25. The synthesis of ATP in photosynthesis and respiration is essentially an oxidation reduction process involving removal of energy from  
 (A)  $O_2$  (B) Photochrome.  
 (C) Cytochrome. (D) Electrons.

26. The NADP reductase is  
 (i) Located on the stroma side of thylakoid membrane.  
 (ii) Associated with noncyclic photophosphorylation.  
 (iii) Associated with PS I.  
 (A) Only (i) is correct.  
 (B) Only (i) and (ii) are correct.  
 (C) Only (ii) and (iii) are correct.  
 (D) (i), (ii), and (iii) are correct.

27. The sequence of reaction in the  $C_3$  cycle were determined in algae by Calvin using  
 (A) Radioactive  $O^{18}$ .  
 (B) Nonradioactive  $O^{18}$ .  
 (C) Heavy isotope of  $N^{15}$ .  
 (D) Radioactive  $C^{14}$ .

28. 3-Phosphoglyceric acid as the first stable product of  $CO_2$  fixation was discovered in the photosynthesis of  
 (A) Chlorella. (B) Cladophora.  
 (C) Mint plant. (D) Spinach.

29. Melvin Calvin traced the path of  $CO_2$  fixation using all except  
 (A) Radioactive  $C^{14}$  in  $CO_2$ .  
 (B) Chlorella.  
 (C) Chromatography and autoradiography.  
 (D) Cladophora and aerobic bacteria.

30. Read the following statements on state them as true (T) or false (F).  
 photorespiration and  
 (A) Oxidation of RuBP in the stroma of chloroplast in bright light and high oxygen.  
 (B) Does not utilise ATP and reducing power.  
 (C) Results in the release of  $CO_2$  with the utilisation of energy.  
 (D) The biological function of photorespiration is not yet known.

|     | A | B | C | D |
|-----|---|---|---|---|
| (A) | F | T | T | F |
| (B) | F | F | T | F |
| (C) | T | F | T | F |
| (D) | T | F | T | T |

31. Dimorphic chloroplasts are found in  
 (A)  $C_3$  plants.  
 (B)  $C_4$  plants.  
 (C) CAM plants.  
 (D)  $C_4$  plants and CAM plants.

32. The Calvin cycle is found in  
 (A) Rice.  
 (B) Sugarcane.  
 (C) Maize.  
 (D) More than one option is correct.

33.  $C_4$  acid formed in the mesophyll cell of  $C_4$  plants leaf during photosynthesis is  
 (A) OAA.  
 (B) Pyruvic acid.  
 (C) PGA.  
 (D) Fumaric acid.

34. How many plants given below have  $C_3$  as well as  $C_2$  pathways and mechanism that increase the concentration of  $CO_2$  at the enzyme site during photosynthesis?

Wheat, maize, rice, potato, sugarcane, tomato, pearl millet, bell pepper, sorghum

- (A) Three (B) Four  
 (C) Six (D) Five

35. Photorespiration is favoured by  
 (A) High  $O_2$  and low  $CO_2$   
 (B) Low light and high  $O_2$   
 (C) Low temperature and high  $O_2$   
 (D) Low  $O_2$  and high  $CO_2$

### (SECTION-B)

36. Which of the following processes in mesophyll cell results in the release of  $CO_2$  with the utilisation of ATP?  
 (A)  $C_3$  pathway  
 (B) Photorespiration  
 (C)  $C_2$  pathway  
 (D) Both (B) and (C)

37. In Opuntia, the concentration of organic acid  
 (A) Increases during the day.  
 (B) Decreases during the day.  
 (C) Decreases during night.  
 (D) Both (A) and (C).

38. Which of the following is incorrectly matched?  
 (A) PS II- $P_{680}$   
 (B)  $C_4$  plant-Photorespiration  
 (C) PCO cycle-Glycolate metabolism  
 (D) Kranz anatomy-Wreath

39. Select the incorrect statements for CAM plants.  
 (A) Double carboxylation  
 (B) RuBisCo activity at night  
 (C) Scotoactive stomata  
 (D) Absence of Kranz anatomy

40. The energetically more expensive but more efficient cycle of dark reaction in plants adapted to dry tropical regions is  
 (A) Calvin cycle.  
 (B) Hatch Slack cycle.  
 (C) Photorespiration.  
 (D)  $C_2$  cycle.

41. A. They tolerate high temperature.  
B. They respond to high light intensities.  
C. They lack photorespiration.  
D. They have greater productivity of biomass. The above characteristics are shown by  
(A) All monocots only.  
(B) C<sub>3</sub> plants.  
(C) C<sub>4</sub> plants.  
(D) All C<sub>2</sub> plants.
42. Relationship between incident light and CO<sub>2</sub> fixation rate is  
(A) Sigmoid at low light intensity.  
(B) Linear at low light intensity.  
(C) Constant at high light intensity.  
(D) Both (B) and (C).
43. Major limiting factor for photosynthesis is  
(A) H<sub>2</sub>O (B) CO<sub>2</sub>  
(C) Light. (D) Temperature.
44. Current availability of CO<sub>2</sub> levels in atmosphere is limiting to all, except  
(A) Wheat and tomato.  
(B) Tomato and rice.  
(C) Maize and sugarcane.  
(D) Tomato and bell pepper.
45. Which of these factors has no direct effect on photosynthesis?  
(A) Light (B) Water  
(C) Temperature (D) CO<sub>2</sub>
46. The plant factors depend on  
(A) Environmental conditions.  
(B) Plant growth.  
(C) Genetic nature.  
(D) More than one option is correct
47. Light is rarely a limiting factor in nature except in  
(A) Maize.  
(B) Sugarcane.  
(C) Sorghum.  
(D) Plant in shade or in dense forest.
48. Increase in light intensity beyond saturation point causes  
(A) More photosynthesis.  
(B) Less photosynthesis.  
(C) Breakdown of chlorophyll and a decrease in photosynthesis.  
(D) Heliotropism.
49. The current availability of CO<sub>2</sub> levels is limiting to the  
(A) C<sub>4</sub> plants.  
(B) C<sub>3</sub> plants.  
(C) CAM plants.  
(D) C<sub>4</sub> and CAM plants.
50. C<sub>3</sub> plants respond to higher CO<sub>2</sub> concentration by showing increased rates of photosynthesis, leading to higher productivity. This feature has been used for some greenhouse crops such as  
(A) Maize and sugarcane.  
(B) Wheat and sorghum.  
(C) Tomato and sugarcane.  
(D) Tomato and bell pepper.