1. How may molecules of ATP and NADPH are required for every molecule of CO_2 fixed in the Calvin cycle? **(2024)**

(a) 2 molecules of ATP and 2 molecules of NADPH

(b) 3 molecules of ATP and 3 molecules of NADPH

(c) 3molecules of ATP and 2 molecules of NADPH

(d) 2 molecules of ATP and 3 molecules of NADPH

2. Which of the following are required for the dark reaction of photosynthesis? **(2024)**

A. Light B. Chlorophyll

C. CO_2 D. ATP E. NADPH

Choose the correct answer from the options given below:

(a) B, C and D only

(b) C, D and E only

(c) D and E only

(d) A, B and C only

3. Given below are two statements : **(2024)**

Statement I : In C_3 plants, some O_2 binds to RuBisCO, hence CO_2 fixation is decreased.

Statement II: In C_4 plants , mesophyll cells show very little photorespiration while bundle sheath cells do not show photorespirations.

(a) Both statements I and statement II are false

(b) Statement I is true but statement II is false

(c) Statement I is false but statement II is true

(d) Both statement I and statement II are true

4. How many ATP and $NADPH_2$ are required for the synthesis of one molecule of Glucose during Calvin cycle? **(2023)**

(a) 18 ATP and 12 $NADPH_2$

(b) 12 ATP and 16 $NADPH_2$

(c) 18 ATP and 16 $NADPH_2$

(d) 12 ATP and 12 $NADPH_2$

5. The reaction centre in PS II has an absorption maxima at **(2023)**

(a) 700 nm (b) 660 nm

(c) 780 nm (d) 680 nm

6. Which Of the following combinations is required for chemiosmosis? **(2023)**

(a) Membrane, proton pump, proton gradient, NADP synthase

(b) Proton pump, electron gradient, ATP synthase

(c) Proton pump, electron gradient, NADP synthase

(d) Membrane, proton pump, proton gradient, ATP synthase

7. Given are two statements :

Statement I: The primary CO_2 acceptor in C_4 plants is phosphoenolpyruvate and is found in the mesophyll cells.

Statement II: Mesophyll cells of C_4 plants lack RuBisCo enzyme.

In the light of the above statements, choose the correct answer from the options given below: **(2022)**

(a) Both Statement I and Statement II are correct

(b) Both Statement I and Statement II are incorrect

(c) Statement I is correct but Statement II is incorrect

(d) Statement I is incorrect but Statement II is correct

8. Which one of the following is not true regarding the release of energy during ATP synthesis through chemiosmosis? It involves: **(2022)**

(a) Breakdown of proton gradient

(b) Breakdown of electron gradient

(c) Movement of protons across the membrane to the stroma

(d) Reduction of NADP to $NADPH_2$ on the stroma side of the membrane

9. What is the role of large bundle sheath cells found around the vascular bundles in C_4 plants? **(2022)**

(a) To provide the site for photorespiratory pathway

(b) To increase the number of chloroplast for the operation of Calvin cycle

(c) To enable the plant to tolerate high temperature

(d) To protect the vascular tissue from high light intensity

10. The first stable product of CO_2 fixation in sorghum is: **(2021)**

(a) Oxaloacetic acid

(b) Succinic acid

(c) Phosphoglyceric acid

(d) Pyruvic acid

11. Which of the following statements is incorrect? **(2021)**

(a) Stroma lamellae have PS I only and lack NADP reductase.

(b) Grana lamellae have both PS I and PS II.

(c) Cyclic photophosphorylation involves both PS I and PS II.

(d) Both ATP and NADPH + H+ are synthesized during non-cyclic photophosphorylation.

12. The oxygenation activity of RuBisCo enzyme in photorespiration leads to the formation of: **(2020)**

(a) 1 molecule of 3-C compound

(b) 1 molecule of 6-C compound

(c) 1 molecule of 4-C compound and 1 molecule of 2-C compound

(d) 2 molecules of 3-C compound

13. In light reaction, plastoquinone facilitates the transfer of electrons from: **(2020)**

(a) Cytb6f complex to PS-I

(b) PS-I to $NADP^+$

(c) PS-I to ATP synthase

(d) PS-II to $Cytb_6f$ complex

14. During non-cyclic photophosphorylation, when electrons are lost from the reaction centre at PS II, what is the source which replaces these electrons? **(2020 Covid Re-NEET)**

(a) Water (b) Carbon dioxide

(c) Light (d) Oxygen

15. Which of the following statements is incorrect? **(2020 Covid Re-NEET)**

(a) In C_4 plants, the site of RuBisCO activity is mesophyll cell

(b) The substrate molecule for RuBisCO activity is a 5-carbon compound

(c) RuBisCO action requires ATP and NADPH

(d) RuBisCO is a bifunctional enzyme

16. In Hatch and Slack pathway, the primary CO_2 acceptor is: **(2019)**

(a) Rubisco

(b) Oxaloacetic acid

(c) Phosphoglyceric acid

(d) Phosphoenol pyruvate

17. Which of the following is not a product of light reaction of photosynthesis? **(2018)**

(a) ATP (b) NADH

(c) NADPH (d) Oxygen

18. With reference to factors affecting the rate of photosynthesis, which of the following statements is not correct? **(2017)**

(a) Light saturation for CO_2 fixation occurs at 10% of full sunlight

(b) Increasing atmospheric CO_2 concentration upto 0.05% can enhance CO_2 fixation rate

(c) C_3 plants responds to higher temperatures with enhanced photosynthesis while C_4 plants have much lower temperature optimum

(d) Tomato is a greenhouse crop which Can be grown in CO_2- enriched atmosphere for higher yield

19. Phosphoenol pyruvate (PEP) is the primary CO_2 acceptor in: **(2017)**
(a) C_3 plants (b) C_4 plants
(c) C_2 plants (d) C_3 and C_4 plants

20. Which of the following is a proteinaceous and water soluble photosynthetic pigment? **(2017)**
(a) Chlorophyll (b) Xanthophyll
(c) Phycocyanin (d) Anthocyanin

21. Which statement is wrong about photorespiration? **(2017)**
(a) RuBP binds with O_2 to form two molecules of phosphoglycolate
(b) Photorespiration occurs in C_3 plants and not C_4 plants
(c) There is no synthesis of ATP or NADPH
(d) RuBisCO has higher affinity for CO_2 than O_2

22. The process which makes major difference between C_3 and C_4 plants is: **(2016 - II)**
(a) Photorespiration
(b) Respiration
(c) Glycolysis
(d) Calvin cycle

23. Phytochrome is a: **(2016 - II)**
(a) Lipoprotein (b) Chromoprotein
(c) Flavoprotein (d) Glycoprotein

24. In a chloroplast the highest number of protons are found in: **(2016 - I)**
(a) Stroma
(b) Lumen of thylakoid
(c) Inter membranal space
(d) Antennae complex

25. A plant in your garden avoids photorespiratory losses, has improved water use efficiency, shows high rates of photosynthesis at high temperatures and has improved efficiency of nitrogen utilisation. In which of the following physiological groups would you assign this plant? **(2016 - I)**
(a) C_3 (b) C_4
(c) CAM (d) Nitrogen fixer

26. Water soluble pigments found in plant cell vacuoles are: **(2016 - I)**
(a) Xanthophylls (b) Chlorophylls
(c) Carotenoids (d) Anthocyanins

27. Emerson's enhancement effect and Red drop have been instrumental in the discovery of: **(2016 - I)**
(a) Photophosphorylation and non-cyclic electron transport
(b) Two photosystem operating simultaneously
(c) Photophosphorylation and cyclic electron transport
(d) Oxidative phosphorylation

28. In photosynthesis, the light-independent reactions take place at: **(2015 Re)**
(a) Photosystem-I
(b) Photosystem-II
(c) Stromal matrix
(d) Thylakoid lumen

29. Anoxygenic photosynthesis is characteristic of: **(2014)**
(a) Ulva
(b) Rhodospirillum
(c) Spirogyra
(d) Chlamydomonas