

Anekant Education Society's  
Tuljaram Chaturchand College of Arts, Science and Commerce,  
Baramati (Autonomous)  
**Department of Botany**  
**Class: M.Sc. I, Subject: BOT 4202 Plant physiology and Biochemistry**  
**Question Bank**

---

**Short Answer Questions**

**(Each carries 2 Marks)**

1. Define photosynthesis?
2. Define respiration?
3. What are proteins?
4. What are lipids?
5. What are enzymes?
6. What are Isozymes?
7. What are secondary metabolites?
8. What is photophosphorylation?
9. What are carbohydrates?
10. What is a NOD factor?
11. What is mean by coenzyme?
12. Define stress?
13. What is source and sink?
14. What is metabolic pool?
15. Define active transport of ions.
16. What is diffusion?
17. Define translocation of organic solute.
18. Enlist any two types of stresses.
19. Define redox potential.
20. What are phototropins.
21. Define binding energy.
22. Define free energy.
23. Write on allosteric enzymes?
24. What are plant growth regulators?
25. Enlist any two plant growth regulators.

**Write a short note**

**(Each Question carries 4 Marks)**

1. Carbon assimilation in CAM plant.
2. RUBISCO activity.
3. Symbiotic nitrogen fixation.
4. Classification of amino acid.
5. Primary protein structure with label diagram.
6. Breakdown of glucose.
7. Enlist different structure of proteins in detail.
8.  $p^H$ .
9. Biological significance of lipids?
10. Source and sink relationship.

11. Buffer.
12. Nitrogen fixation
13. Write chemical properties of proteins.
14. Describe various modes of transport across membrane.
15. State the functions of proteins.
16. Comment on Transport of ions and solutes.
17. Role of secondary metabolites.
18. Light harvesting complex.
19. Glycolipids.
20. State Nernst and Goldman equation.
21. ATP driven active transport system.
22. C<sub>4</sub> cycle.

**Long Answer Questions (Each question carries 6Marks)**

1. Describe briefly physical and chemical properties of amino acid.
2. Write a note on classification of lipids.
3. Write the mechanism transport ions and solutes.
4. What is photorespiration? Discuss its metabolic pathway.
5. Describe the procedure of synthesis of starch.
6. Give the difference between active and passive transport.
7. Explain Ramchandran plot.
8. Explain concept of abiotic and biotic stress.
9. Write a note on resistance to biotic stress.
10. Give significance of photorespiration.
11. Write note on cyanide resistance pathway
12. Describe the regulation of Calvin cycle.
13. Write on biosynthesis of abscisic acid.
14. Write a note on CAM pathway.
15. Write different types of secondary metabolite and explain biosynthesis of any one metabolite.
16. Explain the role of growth regulator in plant growth.
17. Explain pentose phosphate pathway.
18. Write note on phenols and their role in plant.
19. Discuss the process of gluconeogenesis.
20. Explain photoinhibition of O<sub>2</sub> and H<sub>2</sub> evolution.
21. Write on biosynthesis of abscisic acid.
22. Give an overview of glycolysis.
23. Explain photosynthetic pigment system.
24. Explain cyclic electron flow in photosynthesis.
25. Write a note on resistance to abiotic stress
26. Explain Kok curve and Kautsky curve
27. Explain concept of light reaction.
28. Write a note on role of amino acid.
29. Write a short note on competitive and non-competitive inhibition.
30. Write an essay on Isozymes.

31. What are enzyme kinetics and its importance?
32. Write the factor affecting enzyme activity.
33. What is lipid? Give its classification in details.
34. Comment on oxidation of lipid.
35. Explain the mechanism of absorption and transformation of radiant energy.

**Long Answer Questions** **(Each question carries 12Marks)**

1. What are carbohydrates? Give classification of carbohydrates in details.
2. What is starch? Give biosynthesis and breakdown of starch in details.
3. Discuss the comparison of non cyclic and cyclic photophosphorylation .
4. Explain in detail electron transport system in mitochondria
5. What is Michaelis constant. Explain in details.
6. Describe Ramchandran plot.
7. Describe briefly the physio-chemical nature of enzyme.
8. What are secondary metabolites?
9. Explain biosynthesis of secondary metabolites alkaloids in details.

**Questions related to the syllabus** **(Each question Carries 12Mark)**

1. Explain in details phloem loading and unloading and add a note on diffusion.
2. Define the term transpiration and add note on role of transpiration in absorption of water and minerals.
3. Give an account of EMP pathway and add note on significance of photorespiration.
4. Write about C<sub>4</sub> pathway and note on its types.
5. Give general classification of carbohydrates and give an account of synthesis of glucose.
6. Give an account of nodulation and add note on NOD factor.
7. What are the principle of thermodynamics and add note activation of energy.
8. Explain in details synthesis of carotenoids and anthocyanin.
9. What is enzyme, competitive and uncompetitive inhibition of enzyme? Add note on factor affecting on enzyme activity.

