

PRINCIPLES OF BIOCHEMISTRY

I. Write short answers

Marks=3

1. Distinguish between alpha and beta glucose
2. Action of transketolase
3. Define optical activity. State the types of optical isomerism exhibited by
4. carbohydrates
5. Distinguish between D and L forms of biomolecules.
6. Distinguish between Structural and storage polysaccharides
7. Distinguish between glycolysis and gluconeogenesis.
8. Distinguish between oxidative phosphorylation and substrate level phosphorylation
9. Distinguish between Aerobic and anaerobic oxidation of glucose
10. Distinguish between starch and cellulose.
11. Distinguish between simple and compound lipids
12. Different classes of fish lipids
13. Distinguish between Saturated and unsaturated fatty acids
14. Distinguish between Ring and open structure of sugars
15. Distinguish between white and red muscle
16. Distinguish between Secondary and tertiary structure of protein.
17. Distinguish between Polar and Non-polar amino acid
18. Distinguish between Purine and pyrimidine bases in nucleic acids
19. Explain why *cis* fatty acids have lower melting points than *trans* fatty acids
20. Distinguish between water soluble and fat soluble hormones
21. Distinguish between Glycoproteins and peptidoglycan.
22. Define the primary structure of proteins
23. Distinguish between *Cis* and *trans* fatty acids
24. Distinguish between Structural and storage polysaccharides
25. Distinguish between Strong and weak bonds in biomolecules
26. Distinguish between essential and non-essential amino acids
27. Distinguish between RNA and DNA
28. Distinguish between a plant and an animal cell
29. What are polar amino acids?
30. What are aromatic amino acids
31. What are homopolysaccharides
32. What are $\omega 3$ fatty acids
33. Distinguish between omega 3 and omega 6 fatty acids
34. Optical activity
35. What are acidic amino acids
36. What are basic amino acids
39. Distinguish between triglycerides and phospholipids
40. Differences of competitive and non competitive inhibitors

41. What is an asymmetric carbon atom?
42. Distinguish between an aldehyde and ketone.

II Write short notes on the following

marks= 5

1. Role of vitamin A in vision
2. Stereo isomerism
3. Essential fatty acids
4. Effects of oxidative rancidity
5. Muscle contraction and relaxation
6. Solubility of fish muscle protein
7. HMP shunt and its importance
8. Effects of freezing and frozen storage on fish muscle protein
9. What is glycosidic bond? Explain with example.
10. What are zwitterions? Explain
11. What is the relationship between vitamins and coenzymes?
12. Explain with some examples.
13. What is k_m value of enzymes? Explain.
14. Seaweed polysaccharides
15. Fish muscle proteins
16. Hormones
17. Nitrogen excretion in fishes
18. Transcription
19. Why is the iodine value of fish oils high? Explain.
20. What is the importance of phospholipids in structure of cell
21. How is oxidation of fatty acids linked to TCA cycle
22. Phospholipids
23. Mutarotation
24. Co-enzymes
25. Enzyme classification
26. Chitin
27. Give the types of ring structure of sugars. State their importance
28. Give the role of hormones in controlling carbohydrate metabolism
29. Disaccharides
30. What are hormones
31. Inhibition of enzyme activity
32. Oxidative phosphorylation
33. Proteins purification
34. What are basic amino acids? State their function
35. Ascorbic acid
36. Oligosaccharides

37. tRNA structure
38. Mitochondria the power house of the cell
39. Chloroplast
40. Action of Aldolase
41. Action of succinate thiokinase
42. Mitochondria is the power house of the cell

II Write an essay

Marks=10

1. Enlist the water vitamins and give their functions in nutrition.
2. Give an account of the classification of fatty acids present in food
3. Give an account of the nutrients composition of food and state their functions.
4. Write briefly on the primary, secondary tertiary and quaternary structure of food

proteins.

5. Enlist the bonds that stabilize the protein structure
6. Explain the structure of fish muscle protein and describe its function
7. Give the reactions of citric acid cycle and energy conservation
8. Describe the reactions of anaerobic glycolysis and its importance
9. Give an account of the proximate composition of fish and the factors that affect them
10. Explain the structure of glucose
11. Describe the structure of protein.
12. Give the classification of enzymes.
13. What is the central role of TCA cycle in metabolism? Explain.
14. What is the pathway for utilization of fatty acids as energy? Explain
15. Give the classification of monosaccharide and state their importance
16. What is the importance of isomerism in carbohydrate chemistry? Explain.
17. Explain the different levels of proteins structure and its importance
18. Explain the importance of gluconeogenesis in metabolism
19. Give the classification of fatty acids with examples
20. Describe the structure of DNA
21. What is the relationship between sequence of nucleotides in DNA and structure of proteins? Discuss.
22. What are lipids? Give their classification
23. What is the basis for the classification carbohydrates? Explain with Examples
24. How secondary structures of protein change the shape of protein? Explain
25. What are enzymes? Give their classification
26. Describe the mechanism by which protein is synthesized
27. Give the reactions of Glycogenesis and glycogenolysis
28. Give classification of amino acids
29. Explain the important functions B-group of vitamins in metabolism

30. Give the reactions of glycolysis and state the amount of energy conserved.
31. Explain the importance of alternative source of energy in the body when supply of glucose is limited
32. Describe the mechanism of enzymatic catalysis
33. Give the types of hormones secreted and state their functions
34. List the fat soluble vitamin and state their functions
35. Give the mechanism by which enzymes are inhibited.
36. Describe the mechanism of action of hormones.
37. List out the water vitamins and state their functions.
38. describe biological oxidation of food and energy production.