**Assignment:**

Short answer questions:

1. Isoelectric pH.
2. Classification of amino acids on the basis of their side chains.
3. Transport of fatty acids across mitochondrial membrane.
4. Give an account of the number of ATP formed on complete oxidation of palmitic acid.
5. Haemoglobin variants.
6. Crigler-Najjar syndrome.
7. Physiological jaundice in newborn.
8. Congenital erythropoietic porphyria.
9. Glucose Tolerance Test (GTT)
10. Uremia and its clinical significance.
11. Hyperammonemia.
12. Therapeutic Enzymes
13. Explain three factors influencing absorption of iron.
14. Biochemical role of copper.
15. Functions of selenium.
16. Role of Vitamin A in vision
17. Treatment for iron deficiency.
18. Briefly explain selenosis.
19. Maple syrup urine disease.
20. Hartnup disease.
21. Liposomes and its applications
22. Amino acids as neurotransmitters
23. Role of Vitamin E as antioxidant.
24. Infant respiratory distress syndrome
25. Folate Trap
26. Lab Tests in Vitamin B6 Deficiency
27. Biochemical role of Biotin

Explain why:

1. Vitamin C deficiency leads to Scurvy.
2. Every third amino acid in collagen is glycine.
3. Orlistat is used as an anti-obesity drug and statins are used in hypercholesterolemia.
4. Prolonged use of aspirin can lead to toxicity and aspirin exacerbated respiratory disease (AERD).
5. Explain the genetic defect and causes of steatorrhea in Cystic Fibrosis.
6. Synthesis of ALA occurs in mitochondrial matrix whereas formation of porphobilinogen occurs in cytoplasm.
7. Photosensitivity and neuropsychiatric symptoms are seen in some porphyrias.
8. Lead poisoning causes anaemia.
9. Phototherapy is given to new-borns with jaundice.
10. 2,3-BPG level is high at high altitudes.
11. Presence of HbS trait is common in areas that are endemic for malaria.
12. What is the daily requirement of zinc and why its requirement gets increased during pregnancy?
13. Why the symptoms of copper toxicity are seen in Wilson’s disease?
14. Bicarbonate buffer is the best buffer system despite its pk being 6.1.
15. Arginine and benzoate are used in management of urea cycle defect.

Compare and contrast:

1. Myoglobin and haemoglobin.
2. Alpha helix and beta-pleated sheets.
3. Prostaglandins and thromboxanes.
4. Alpha-oxidation and beta-oxidation.
5. Lipoprotein lipase and hormone sensitive lipase.
6. Starch and glycogen
7. Glycosaminoglycans and proteoglycans.
8. Plasma Functional and non functional enzymes
9. HbA and HbS.
10. Alpha and beta thalassemias.
11. Carbamoyl phosphate synthase I and II.
12. Muscle and liver glycogen phosphorylase.
13. Peripheral and integral membrane proteins.
14. Competitive and non-competitive inhibitors.
15. Wet Beri Beri and Dry Beri Beri

Long structured questions:

1. Define hemoglobinopathies and their causes. State the difference between haemoglobinopathies and thalassemias. Give an account of biochemical basis and clinical relevance of any one hemoglobinopathy.
2. Enumerate the ketone bodies. Describe their synthesis. How is ketogenesis regulated in the body. Explain why uncontrolled diabetes mellitus leads to acidosis.
3. Describe the committed step in cholesterol biosynthesis. How is cholesterol biosynthesis regulated. Explain the role of cholesterol in atherosclerosis. Name two hypolipidemic drugs and their mechanism of action.
4. What are isoenzymes? Discuss their uses in the diagnosis of myocardial infarction.
5. Describe the biochemical test for the differential diagnosis of jaundice.
6. Define infectious medical waste. Enumerate various infectious medical waste and atleast two diseases caused by blood borne pathogens. Name common disinfectants used against them.
7. Explain how does a cell recognise protein that should be degraded.
8. Discuss the steps of urea cycle. How is it regulated?
9. Explain in detail the reactions of transamination and oxidative deamination.
10. Enumerate carbohydrates having structural role in human body with special emphasis on structural – functional relationship.
11. Explain the role of Vitamin D in regulation of serum calcium levels.
12. Explain the biochemical defect and laboratory findings in hepatic porphyrias.
13. Explain the normal iron kinetics.
14. Describe the mechanism for iron transport in blood and uptake by cells.
15. Explain the diseases associated with abnormal copper metabolism.
16. What are the zinc deficiency manifestations?
17. Define enzyme kinetics. Enlist the factors that affect the rate of enzyme catalysed reaction and explain with the help of a diagram any two of them.
18. Explain with the help of a diagram the reciprocal regulation of glycogenesis and glycogenolysis.
19. Name the aromatic amino acids. Describe the catabolism of tryptophan in detail. Mention the inborn errors associated with its metabolism.
20. Discuss the biochemical mechanisms of regulation of blood glucose level in the fasting and fed state.
21. Describe the compensatory mechanisms that are activated in case of metabolic acidosis.