Instructions:

1. Solve any EIGHT of the following:

(a) Define & explain metabolism.

(b) What is enediol reaction of carbohydrate? Give its biological importance.

(c) What are essential amino acids? Give structure of any one of them.

(d) Explain with chemical reaction, saponification reaction of simple fats.

(e) What is egg-white injury? Give its symptoms.

(f) Define pathology. Name any one pathological condition in human being.

(g) What do you mean by ‘s-GOT’ in enzymes? What is its significance?

(h) What is the importance of electron transport & oxidative phosphorylation in carbohydrate metabolism?

(i) Explain the process of transamination in protein catabolism.

(j) What are Keton bodies? What is Ketogenesis?

(k) Give only structure of Folic Acid.

(l) How water is distributed in the different compartments in the body of human being?
2. **Solve any FOUR of the following**: 12

   (a) Define ‘cell’. Draw neat labelled diagram of a typical animal cell & give two functions of mitochondrion.

   (b) Give structures of the following:

      (i) $\alpha$-D Glucose

      (ii) $\alpha$-D Mannose

      (iii) $\beta$-D Fructose

   (c) Discuss ‘acid-base’ nature of amino acids & explain isoelectric point of an amino acid.

   (d) Define lipids. Classify lipids with examples.

   (e) Explain any six biological functions of ‘Calcium’.

   (f) Give significance of abnormal constituents of urine. (any six)

3. **Solve any FOUR of the following**: 12

   (a) Give pharmaceutical & therapeutic use of enzymes.

   (b) Explain ‘Coris’ cycle & give its biological importance.

   (c) How ammonia is produced in the body? Enlist different ways of disposal of ammonia from the body.

   (d) What are lipid storage diseases? Explain arteriosclerosis.

   (e) Explain biological role of carbohydrates.

   (f) Define polysachharides. Explain the structure of glycogen.
4. Solve any FOUR of the following:

(a) Explain any one protein deficiency disease.
(b) Define the following:
   (i) Polensky value
   (ii) Iodine value
   (iii) Sap. value
(c) Explain the role of lipids in biological membrane with the help of models.
(d) Define dehydration. Explain causes, symptoms & treatment of dehydration.
(e) What are coenzymes? Name co-enzymes of the following vitamins:
   (i) Thiamin
   (ii) Pyridoxin
   (iii) Riboflavin
   (iv) Nicotinamide
(f) Explain causes, symptoms & treatment of the following diseases:
   (i) Scurvy
   (ii) Pellagra

5. Solve any FOUR of the following:

(a) Explain functions & pathology of lymphocytes & platelets.
(b) Give structure & two colour reaction of cholesterol.

P.T.O.
(c) Define compound lipids. Explain any two important biological functions of phospholipids.

(d) Explain the following colour reactions:
   (i) Seliwanoff’s reaction
   (ii) Ninhydrin reaction
   (iii) Newman’s reaction

(e) Discuss –
   (i) Pernicious anemia
   (ii) Sickle-cell anemia

(f) Define & explain Glycogenesis. Give in brief, importance of the process.

6. Solve any FOUR of the following:

(a) Explain reactions of beta oxidation of fatty acids.

(b) Explain reactions of Kreb’s cycle.

(c) Explain Urea cycle in detail.

(d) Discuss extramitochondrial fatty acid synthesis.

(e) Explain reactions of Glycolysis.

(f) Discuss secondary structures of protein.