Instructions – (1) All Questions are Compulsory.

(2) Answer each next main Question on a new page.

(3) Illustrate your answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following: 20

a) Define the terms:
   (i) Marker enzymes
   (ii) Isoenzymes
   (iii) Metal contactor
   (iv) Zwitterion

b) Name four important organelles of animal cell and write one function of each.

c) Write short note on:
   (i) Essential fatty acids.
   (ii) Nutritional edema

d) Define and classify lipids.

e) Explain the terms and treatment of:
   (i) Hyponatremia
   (ii) Hypothyroidism

P.T.O.
Write short note on:
(i) Oxidative phosphorylation
(ii) Transamination

Explain the terms:
(i) Purpura
(ii) Polycythemia.

2. Attempt any THREE of the following: 12

a) Define the terms:
   (i) Biochemistry
   (ii) Pathology
   (iii) Catabolism
   (iv) Anabolism

b) Write a note on:
   (i) Acrolein formation
   (ii) Denaturation of proteins


d) Explain the identification test for:
   (i) Carbohydrates
   (ii) Proteins

e) Define unit of enzyme activity. Mention four important factors that affect enzyme activity. Explain effect of temperature.
3. Attempt any THREE of the following:  

a) Write structure of:
   (i) Nicotinamide
   (ii) Alanine
   (iii) D-fructose
   (iv) Lactose

b) Define proteins. Explain the role of proteins in human body.

c) Explain oxidation of glucose with different oxidizing agents with reactions.

d) Explain biochemical role of potassium and chlorine in our body.

e) What are oils? Explain the role of antioxidant in preservation of oil.

4. Attempt any THREE of the following:  

a) Define the term ‘Enzyme’. Explain binding of substrate with an enzyme at the active site.

b) Explain secondary structure of proteins.

c) What is pathological urine? Mention abnormal constituents of urine and their significance.

d) Explain the importance of water in our body. Mention the routes of excretion of water from the body.

e) What are coenzymes? Give full names of six vitamins and their respective coenzymes.
5. Attempt any THREE of the following: 12
   a) Discuss in brief the reactions involved in β-oxidation of fatty acids.
   b) Explain in short:
      (i) Acid value
      (ii) Acetyl number
      (iii) Phospholipids
      (iv) Iodine number.
   c) Explain biochemical role of calcium. Mention its deficiency manifestations and remedy.
   d) Write short note on:
      (i) Arteriosclerosis
      (ii) Hyperammonemia
   e) What is enzyme inhibition? Explain competitive inhibition with one example.

6. Attempt any TWO of the following: 12
   a) Explain glycolysis cycle.
   b) Explain:
      (i) Phenylketonuria
      (ii) Ketosis
   c) Give schematic representation of classification of carbohydrates. Explain each class with examples.