KNT/KW/16/5134

Bachelor of Science (B.Sc.) Semester–III (C.B.S.) Examination

BIOTECHNOLOGY (Metabolism)

Paper — I

Time : Three Hours] [Maximum Marks : 50

N.B. :— (i) **All** questions are compulsory and carry equal marks.

(ii) Draw well labelled diagrams wherever necessary.

1. What are high energy compounds ? Explain in detail ADP-ATP cycle. 10

OR

Write notes on :

(a) Structure of Phosphoenol pyruvate. 2½

(b) Inhibitors of Glycolysis 2½

(c) By-pass reactions of Gluconeogenesis 2½

(d) Entry of other monosaccharides in glycolysis. 2½

2. Describe in detail TCA cycle. 10

OR

(a) Describe Chemiosmotic theory of oxidative phosphorylation. 5

(b) Describe the structure of mitochondria. 5

3. Describe in detail β-oxidation of saturated fatty acids. 10

OR

Write notes on :

(a) Ketogenesis 2½

(b) Synthesis of unsaturated fatty acids. 2½

(c) Mitochondrial system of chain elongation. 2½

(d) Fatty acid synthase complex. 2½

4. Describe in detail pathways of purine nucleotide biosynthesis. 10

OR

(a) Draw a diagrammatic representation of urea cycle. 2½

(b) Describe transamination. 2½

(c) Describe transmethylation. 2½

(d) Describe deamination. 2½

5. Solve any **ten** :

(i) Define Ethalpy.

(ii) Define Entropy.

(iii) Define Gibb's free energy.

(iv) Why TCA cycle is anaplerotic in nature ?

(v) Name the component of ETC.

(vi) Name the components of ATP synthase.

(vii) What is omega oxidation ?

(viii) What is the role of carnitine in β-oxidation of fatty acids ?

(ix) Name the enzymes involved in unsaturated fatty acids.

(x) Define decarboxylation.

(xi) Name metabolic disorders of urea cycle.

(xii) How will you link, the urea cycle and TCA cycle ? 10×1=10