KNT/KW/16/5182

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

METABOLISM–I

Paper–1

(Bio-Chemistry)

Time : Three Hours] [Maximum Marks : 50

N.B. :— (1) **All** questions are compulsory and carry equal marks.

(2) Draw well labelled diagrams wherever necessary.

1. Describe the ATP-ADP cycle in detail. 10

OR

(a) Give reasons for the behaviour of ATP as a high energy compound. 5

(b) Write a note on Phospho-Enol pyruvate and creatine phosphate as high energy compounds. 5

2. Describe the techniques involved in metabolic studies using intact organisms and organ slices. 10

OR

(a) How are cell organelles isolated for metabolic studies ? Describe in detail. 5

(b) Describe the use of tracers in metabolic studies. 5

3. (a) Describe the pathways for entry of fructose into glycolysis. 5

(b) Write a note on Glycogenesis. 5

OR

(c) Describe Cori Cycle. 2½

(d) What are futile cycles ? Explain one significance of futile cycles. 2½

(e) Describe the fate of pyruvate under anaerobic conditions. 2½

(f) What is meant by “Anaplerotic nature of TCA cycle” ? Explain with one example. 2½

4. Give a detailed account of the bypass reactions of gluconeogenesis. 10

OR

(a) Explain how Glyoxylate Cycle is different from TCA Cycle. 2½

(b) Draw a well labelled diagram of the structure of mitochondria. 2½

(c) Write the sequence of electron transport chain components along with sites of ATP synthesis. 2½

(d) Write a note on chemiosmotic hypothesis. 2½

5. Answer any **ten** of the following :

(i) What is meant by ΔG^{01} ? 1

(ii) Name two high energy compounds which can donate energy to ADP to form ATP. 1

(iii) Define entropy. 1

(iv) What is the meaning of organectomy ? 1

(v) Give one reason why microorganisms are preferred over multicellular organisms for metabolic studies. 1

(vi) Name two clinical techniques employed for metabolic studies. 1

(vii) Why is TCA cycle called an “Amphibolic” pathway ? 1

(viii) Name the multienzyme complex which converts pyruvate to acetyl COA under aerobic conditions. 1

(ix) Name one glycogen storage diseases. 1

(x) Name the enzyme involved in detoxifying the superoxide radicals generated during ETC. 1

(xi) Name one uncoupler of oxidative phosphorylation. 1

(xii) ATP synthesizing complex of oxidative phosphorylation is also known as_____. 1