

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^0 ? 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