SH ZOO—10

4th Semester Examination, 2022

Time : 3 hours

Full Marks : 60

Answer from **all** the Parts as per direction

The figures in the right-hand margin indicate marks

Candidates are required to answer in their own words as far as practicable

(BIOCHEMISTRY OF METABOLIC PROCESSES)

PART – I

1. Answer the following questions either in *one* word or by fill in the blanks : 1×8

(*a*) A reducing equivalent serves as _____ in a redox reaction and in turn is oxidized.

(*b*) _____ is a biochemical process where the simple molecules combine to generate complex molecules.

(*c*) How many substrate level ATPs are produced from complete oxidation of a glucose molecule ?

(*d*) The key regulatory enzyme of glycolysis is _____ .

(*e*) Omega oxidation mostly occurs in _____ organelle of the cell.

(*f*) Amino acids that can be converted into glucose through gluconeogenesis are _____ amino acids.

(*g*) What is regarded as the most important mobile electron carrier of ETS ?

(*h*) The final acceptor of electron in ETC is _____.

PART – II

2. Answer any *eight* of the following questions within *two* to *three* sentences each : $1\frac{1}{2} \times 8$

(*a*) How is energy produced from ATP molecules ?

(*Continued*)

(*b*) Define cofactor with examples.

(*c*) What are the irreversible steps of glycolysis ?

(*d*) What is phosphorolysis of glycogen ?

(*e*) How is malonyl-CoA synthesized ?

(*f*) What are ketogenic amino acids ?

(*g*) What are electron transport complexes ?

(*h*) Why do uncoupling agents increase oxygen consumption ?

(*i*) What is the fate of pyruvate in anaerobic respiration ?

(*j*) Which enzymes are used in glycogenesis ?

PART – III

3. Write notes on any *eight* of the following within *75* words each : 2×8

(*a*) Stages of catabolism

(*b*) Coupled reactions

(*c*) Conversion of pyruvate to Acetyl-CoA.

(*d*) Gluconeogenesis

(*e*) Transamination

(*f*) Synthesis of ketone bodies

(*g*) Importance of redox reactions in biological systems

(*h*) Cytochromes

(*i*) Intermediary metabolism

(*j*) Amphibolic roles of Krebs cycle.

PART – IV

Answer **all** the following questions within **500** words each : 6 × 4

4. What is compartmentalization of metabolic pathways ? Why is it important ?

Or

Briefly describe the components, mechanism and regulation of malate-aspartate shuttle.

5. Discuss the reaction steps of citric acid cycle.

Or

What is HMP shunt ? Describe the sequence of reactions of this pathway.

6. Give an account of β – oxidation of palmitic acid.

Or

Describe the process of Urea cycle.

7. Describe the nature and chemical organization of electron carriers.

Or

Give an account of inhibitors and uncouplers of ETS.
