2026

ZOOLOGY

(Major)

PANDITRAM DHEKIL PHUKAN COLLEGE LIBRARY
Acc. No.
Date
Nagaon · Assam

Paper : ZLG0600304

(Biochemistry of Metabolic Processes and Regulation)

Full Marks : 45

Time : 2 hours

The figures in the margin indicate full marks for the questions.

1. Choose the correct answer/Write True or False : 1×5=5

(a) What is the substrate for the last step of glycolysis?

(i) Glyceraldehyde 3-phosphate

(ii) Phosphoenolpyruvate

(iii) 1,3-bisphosphoglycerate

(iv) None of the above

(b) β-oxidation of fatty acid occurs in

(i) cytoplasm

(ii) nucleus

(iii) mitochondria

(iv) All of the above

(c) Oxidative phase of pentose phosphate pathway is non-reversible phase.
(Write True or False)

(d) From which toxic substance urea is formed?
(i) Ammonia
(ii) Uric acid
(iii) Carbon dioxide
(iv) None of the above

(e) In which reaction of the Krebs' cycle FAD is reduced?
(i) Isocitrate to oxaloacetate
(ii) Succinyl-CoA to succinate
(iii) Fumarate to malate
(iv) Succinate to fumarate

2. Answer any *five* of the following in brief : 2×5=10

(a) Define metabolism.

(b) Why is ATP called the energy currency of the cell?

(c) What are co-factors?

(d) Why is TCA cycle called amphibolic pathway?

(e) What is the significance of pentose phosphate pathway?

ANANDARAM DHEKIL PHOOKAN COLLEGE LIBRARY
Acc. No.
Date
Nagaon · Assam

(f) Define deamination.

(g) Define substrate-level phosphorylation.

(h) What is coupled reaction? State its significance.

(i) What is redox reaction? How does redox reaction contribute in ATP production?

(j) Define glycogenolysis.

3. Answer any *four* of the following : 5×4=20

(a) What is gluconeogenesis? Briefly describe the metabolic reaction of gluconeogenesis. 1+4=5

(b) Explain chemiosmotic hypothesis.

(c) Describe the process of urea cycle.

(d) Explain the process of glycogenesis and add a note on its regulation.

(e) What is omega oxidation? Write about its significance.

(f) Write a note on inhibitors of respiratory chain.

(g) Explain the fate of C skeleton of glucogenic amino acid.

(h) Describe schematically the process of ketogenesis.

4. Answer any *one* of the following : 10

(a) Explain the process of β-oxidation of saturated fatty acid with even number of carbon atom. Give the energetics involved in the process. 7+3=10

(b) Describe the process of glycolysis. Explain the regulatory steps of glycolysis and its energetics. 5+3+2=10

(c) Describe the various components of electron transport chain with diagrammmatic illustration of electron flow and ATP producing sites. 7+3=10

(d) Describe the reactions of citric acid cycle. Explain the regulatory mechanism of citric acid cycle. 5+5=10

★ ★ ★

ANANDARAM DHEKIL PHUKAN COLLEGE LIBRARY
Acc. No.
Date
Nagaon · Assam