

B.Sc. Semester - 5 (Remedial) (CBCS) Examination**March/April-2025 (NEW COURSE)****Prokaryotic Metabolism(Core)****Time: 2:30 Hours****Marks: 70****Instructions:**

1. All questions are compulsory.
 2. Figures to the right indicate marks.
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Que.1(A) Objective type questions.**(04)**

- 1) What are precursor metabolites?
- 2) _____ + Phosphate = ATP
- 3) Define: entropy
- 4) True/False: Catabolic pathways are energy liberating that break molecules into simpler molecules.

Que.1(B) Answer in Brief (Any One out of Two)**(03)**

- 1) Determination of delta G
- 2) Mechanisms of regulatory enzymes

Que.1(C) Write a Note on (Any One out of Two)**(07)**

- 1) Reversible type of Enzyme inhibition
- 2) Allosteric enzymes

Que.2(A) Objective type questions.**(04)**

- 1) Name any one enzyme used in citric acid cycle.
- 2) The Entner–Doudoroff (ED) pathway is a metabolic pathway that breaks down glucose into pyruvate. (True/False)
- 3) Define: Trans-amination
- 4) What is the importance of Pentose phosphate pathway?

Que.2(B) Answer in Brief (Any One out of Two)**(03)**

- 1) Graphical representation of citric acid cycle
- 2) Stickland reactions

Que.2(C) Write a Note on (Any One out of Two)**(07)**

- 1) Glycolysis pathway
- 2) Oxidation of Fatty Acids

Que.3(A) Objective type questions.**(04)**

- 1) What is the use of biochemical mutant?
- 2) Bacterial photosynthesis does not produce oxygen. (True/False)
- 3) Which molecule usually acts as the final electron acceptor in fermentation?
- 4) What is the primary energy currency of the cell?

- Que.3(B) Answer in Brief (Any One out of Two) (03)**
- 1) Describe the types of fermentation in anaerobic respiration?
 - 2) Application of Isotopic Labelling
- Que.3(C) Write a Note on (Any One out of Two) (07)**
- 1) Bacterial photosynthesis
 - 2) Components of ETC
- Que.4(A) Objective type questions. (04)**
- 1) Name one example of nitrifying bacteria.
 - 2) Lactic acid bacteria primarily ferment ____ (which carbohydrate?).
 - 3) Name one Gram-negative enteric bacterium.
 - 4) Define: Methanogenesis
- Que.4(B) Answer in Brief (Any One out of Two) (03)**
- 1) Chemoautotrophy in prokaryotes
 - 2) Fermentation in gram negative enteric bacteria
- Que.4(C) Write a Note on (Any One out of Two) (07)**
- 1) Carbohydrate fermentation in Lactic acid bacteria
 - 2) Photophosphorylation in Halobacterium
- Que.5(A) Objective type questions. (04)**
- 1) Name one type of membrane lipid.
 - 2) Diffusion of water across a membrane is called ____.
 - 3) What is the use of phosphotransferase system (PTS)?
 - 4) Name one bacterial process controlled by quorum sensing.
- Que.5(B) Answer in Brief (Any One out of Two) (03)**
- 1) Importance of Quorum sensing for bacteria
 - 2) Iron transport systems
- Que.5(C) Write a Note on (Any One out of Two) (07)**
- 1) Types of active transport
 - 2) Structure of plasma membrane of prokaryotes
