

B.Sc. Semester - 5 (CBCS) Examination
Oct/Nov - 2024 (NEW COURSE)
Prokaryotic Metabolism(Core)

Time: 2:30 Hours**Marks: 70****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate marks.

-
- Que.1(A) Objective type questions. (04)
1. What is an Allosteric Enzyme?
 2. What is Entropy?
 3. Anabolic Pathways are energy requiring metabolic pathways that form complex molecules from simpler molecules. (True/False).
 4. The Acronym ATP stands for _____.
- Que.1(B) Answer in Brief. (any one out of two) (03)
1. Explain Gibbs Free Energy.
 2. Differentiate between Regulatory and Non-regulatory Enzymes.
- Que.1(C) Write a Note on. (any one out of two) (07)
1. Reversible type of Enzyme Inhibition.
 2. Role of ATP in Microbial Metabolism.
- Que.2(A) Objective type questions. (04)
1. What is the primary function of Glycolysis?
 2. What is the main product of beta-oxidation of Fatty Acids?
 3. Who invented TCA Cycle?
 4. In Amino Acid Catabolism, what is the Stickland reaction?
- Que.2(B) Answer in Brief. (any one out of two) (03)
1. Beta-oxidation of Fatty Acids.
 2. The Entner-Doudroff Pathway.
- Que.2(C) Write a Note on. (any one out of two) (07)
1. Outline the steps of Glycolysis.
 2. The Citric Acid Cycle.
- Que.3(A) Objective type questions. (04)
1. How are biochemical mutants used in Biosynthesis Research?
 2. Name a key component of The Electron Transport Chain.
 3. What is the primary function of the electron transport chain (ETC)?
 4. What is Isotopic Labelling?
- Que.3(B) Answer in Brief. (any one out of two) (03)
1. Explain types of Anaerobic Respiration.
 2. Describe about pigments involved in Bacterial Photosynthesis.
- Que.3(C) Write a Note on. (any one out of two) (07)
1. Components of ETC in Microbial Metabolism.
 2. Applications of Biochemical Mutants.

- Que.4(A) Objective type questions. (04)
1. What is the key metabolic product of methanogens in Archaeobacteria?
 2. Name a unique feature of the energy metabolism of Halobacterium.
 3. Define: Chemoautotrophs.
 4. What is the main function of nitrifying bacteria in the Environment?
- Que.4(B) Answer in Brief. (any one out of two) (03)
1. Compare Homolactic and Heterolactic Fermentation.
 2. Explain lactose fermentation in Gram-negative Enteric Bacteria.
- Que.4(C) Write a Note on. (any one out of two) (07)
1. Describe carbon assimilation in Methanogens.
 2. Explain chemolithotrophy in Sulfur-oxidizing Bacteria.
- Que.5(A) Objective type questions. (04)
1. Gas transport across membranes occurs by the ____ mechanism.
 2. Chemiosmosis is the mechanism used by oxidative phosphorylation to directly make ATP. (True/False).
 3. What is Osmosis?
 4. Name one specific example of a Mechanosensitive Channel.
- Que.5(B) Answer in Brief. (any one out of two) (03)
1. Bacterial Plasma Membrane.
 2. Explain the significance of Chemiosmotic-driven Transport.
- Que.5(C) Write a Note on. (any one out of two) (07)
1. Active transport mechanism in Cell Membranes, providing examples of each.
 2. The Phosphotransferase System.
