

B.Sc. Semester - 5 (CBCS) Examination
Oct/Nov - 2023 (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) Give specific answer. (04)
1. Define: Enzyme.
 2. Explain: Entropy.
 3. Give the Line weaver-Burk equation.
 4. Law of thermodynamics which states that energy can neither be created nor be destroyed is _____. (First, Second, Third).
- Que.1(B) Answer in brief. (any one out of two) (03)
1. Short note on: Determination of ΔG .
 2. Discuss the importance of reducing power in metabolic pathways.
- Que.1(C) Write a note on. (any one out of two) (07)
1. Explore different forms of enzyme inhibition.
 2. Provide the derivation of the Michaelis-Menten Equation.
- Que.2(A) Give specific answer. (04)
1. Define: Oxidation
 2. Write full form of PPP.
 3. Protein is made up of _____.
 4. How many ATP are synthesized via glycolysis of a single molecule of glucose?
- Que.2(B) Answer in brief. (any one out of two) (03)
1. Examine the Stickland reactions in detail.
 2. Provide an explanation of the Pentose Phosphate Pathway.
- Que.2(C) Write a note on. (any one out of two) (07)
1. Describe the Glyoxylate cycle.
 2. Provide a brief overview of the Glycolysis cycle and its regulatory mechanisms.
- Que.3(A) Give specific answer. (04)
1. Name any two of photosynthetic bacteria.
 2. Where ETC processed take place in Animal cell?
 3. ATP is _____. (Nucleotide, Nitrogen bases)
 4. Name any two Isotope use for studying biosynthesis.
- Que.3(B) Answer in brief. (any one out of two) (03)
1. Explain the various methods of ATP production.
 2. Describe the fundamental mechanisms of anaerobic respiration.
- Que.3(C) Write a note on. (any one out of two) (07)
1. Give the brief overview of bacterial photosynthesis.
 2. Provide a comprehensive explanation of the Electron Transport Chain (ETC).
- Que.4(A) Give specific answer. (04)
1. Elaborate the word methanotrops.
 2. Provide a definition of nitrification.
 3. Write any two examples of halophiles?
 4. What do you mean of chemoautotrophs?

- Que.4(B) Answer in brief. (any one out of two) (03)
1. Provide a concise overview of Hydrogen Bacteria.
 2. Write the concise explanation of carbon assimilation in methanogens.
- Que.4(C) Write a note on. (any one out of two) (07)
1. Provide a brief overview of sulfur oxidizers.
 2. Describe the process of photophosphorylation in Halobacterium.
- Que.5(A) Give specific answer. (04)
1. Define: Symport.
 2. Explain: Signal Transduction.
 3. FRAP can be used to DNA replication process. (True/False)
 4. Siderophore activity is related do _____. (Iron transport, Membrane proteins)
- Que.5(B) Answer in brief. (any one out of two) (03)
1. Explain: Membrane lipids.
 2. Provide a brief overview of membrane carbohydrates and membrane proteins.
- Que.5(C) Write a note on. (any one out of two) (07)
1. Provide a comprehensive explanation of passive transport, including an example.
 2. Describe the composition and structure of cell membranes and their components.
