

B.Sc. Semester - 5 (CBCS) Examination
Oct/Nov. - 2023(Old Course)
PROCARYOTIC 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) Answer the following. (any one) (07)
1. Explain the regulation of enzyme activity.
 2. Discuss the significance of precursor metabolites in metabolic processes.
- Que.1(B) Answer the following. (any one) (04)
1. Provide a brief overview of energy-rich compounds.
 2. Explain the function of ATP in metabolic processes.
- Que.1(C) Answer the following. (any three) (03)
1. Define: ATP
 2. Explain: Allosteric site.
 3. Provide the Michaelis-Menten equation.
 4. The molecule which acts directly on an enzyme to lower its catalytic rate is inhibitor. (True/False)
 5. Law of thermodynamics which states that the energy of the universe remains the same is (First, Second, Third).
- Que.2(A) Answer the following. (any one) (07)
1. Elaborate on the process of Beta-Oxidation of Fatty Acids.
 2. Provide a brief overview of the TCA cycle and its regulatory mechanisms.
- Que.2(B) Answer the following. (any one) (04)
1. Provide a detailed explanation of the Entner-Doudoroff pathway.
 2. Describe the typical reactions involved in the catabolism of amino acids.
- Que.2(C) Answer the following. (any three) (03)
1. Define: Metabolism.
 2. Write two other names of TCA cycle.
 3. Glycolysis is occurred present in _____. (Mitochondria, Cytosol)
 4. How many ATP are synthesized from breakdown of one molecule of Glucose?
 5. Glucose to glucose-6-P is common step in the glycolysis and pentose phosphate pathway. (True/False)
- Que.3(A) Answer the following. (any one) (07)
1. Provide a comprehensive explanation of the use of isotopic labeling in studying biosynthesis.
 2. Write a brief overview of the components and energy production in the Electron Transport Chain (ETC).
- Que.3(B) Answer the following. (any one) (04)
1. Describe the approach for bacterial photosynthesis.
 2. Utilizing biochemical mutants for investigating biosynthesis.
- Que.3(C) Answer the following. (any three) (03)
1. Explain: Biosynthesis
 2. Define: Photosynthesis.
 3. Name any two of photosynthetic bacteria.
 4. Pyruvate is directly involved in ETC. (True/False)
 5. Where in cell ETC processed take place in eukaryotic cell?
- Que.4(A) Answer the following. (any one) (07)
1. Provide a brief overview of nitrifying bacteria.
 2. Elaborate on the fermentative patterns exhibited by gram-negative Eubacteria.

- Que.4(B) Answer the following. (any one) (04)
1. Write the brief overview of Archaeobacteria.
 2. Explain the role of iron bacteria in metabolism.
- Que.4(C) Answer the following. (any three) (03)
1. Elaborate the word methanogens.
 2. Provide a definition of nitrification.
 3. What do you mean of chemotrophs?
 4. Give the explanation of Halobacterium.
 5. Example of any two denitrifying bacteria?
- Que.5(A) Answer the following. (any one) (07)
1. Provide a brief explanation of signal transduction.
 2. Give a brief explanation of quorum sensing with example.
- Que.5(B) Answer the following. (any one) (04)
1. Elaborate on chemiosmotic-driven transport.
 2. Highlight the distinctions between active transport and passive transport.
- Que.5(C) Answer the following. (any three) (03)
1. Define: Uniporter
 2. Explain: Aqua Porin
 3. Write the full form of FRAP.
 4. Na/P pump is example of transport system.
 5. In active transport system no need to ATP. (True/False)
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