



**RO-003-1015010**

Seat No. \_\_\_\_\_

**Third Year B. Sc. (Sem. V) (CBCS) Examination**

**February - 2019**

**Microbiology : Paper - 502**

*(Prokaryotic Metabolism)*

*(New Course)*

**Faculty Code : 003**

**Subject Code : 1015010**

Time :  $2\frac{1}{2}$  Hours]

[Total Marks : 70

- Instructions :** (1) All Questions are compulsory.  
(2) Right side figures indicate mark of the question.  
(3) Draw the figure wherever necessary.  
(4) Write answers of all the questions in main answer sheet.

- 1 (A) Answer the following : 4  
(1) Give full form of NAD & NADP  
(2) Define Bioenergetics  
(3) What do you mean by Precursor metabolites?  
(4) What is  $K_m$ ?
- (B) Answer in Brief : (Any One) 2  
(1) Give concept of Gibbs free energy  
(2) Explain redox reactions with examples
- (C) Answer in Detail : (Any One) 3  
(1) Explain role of ATP in metabolism  
(2) Explain importance of conformational changes in regulatory enzymes
- (D) Write a note on : (Any One) 5  
(1) Derive Michaelis-Menten equation for the enzymatic reaction  
(2) Discuss in detail energy rich molecules

- 2 (A) Answer the following : 4
- (1) What is catabolism?
  - (2) Name regulatory enzymes of TCA Cycle
  - (3) Which are different modes of amino acid catabolism?
  - (4) What is Glyoxylate cycle?
- (B) Answer in Brief : (Any One) 2
- (1) Discuss transamination with one example
  - (2) Explain the outcome of HMP Shunt
- (C) Answer in Detail : (Any One) 3
- (1) Discuss in detail Stickland Reaction
  - (2) Discuss in detail Entner Doidroff pathway
- (D) Write a note on : (Any One) 5
- (1) Glycolysis
  - (2) Beta Oxidation of Fatty Acids
- 3 (A) Answer the following : 4
- (1) Define biochemical mutant
  - (2) What is Anoxygenic photosynthesis?
  - (3) Which is the photosynthetic structure of Purple bacteria?
  - (4) What are Quinones?
- (B) Answer in Brief : (Any One) 2
- (1) Anaerobic respiration
  - (2) How isotope labelling is used to study strategies of biosynthesis?
- (C) Answer in Detail : (Any One) 3
- (1) Discuss substrate level phosphorylation with examples
  - (2) Discuss in detail Photosynthetic pigments
- (D) Write a note on : (Any One) 5
- (1) Bacterial Electron Transport Chain
  - (2) Oxygenic Photosynthesis

- 4 (A) Answer the following : 4
- (1) Define chemo autotrophs
  - (2) What do you mean by Archaeobacteria?
  - (3) Give two examples of Nitrifying bacteria
  - (4) Give two examples of Sulfur Oxidizers
- (B) Answer in Brief : (Any One) 2
- (1) Explain Hydrogen Bacteria
  - (2) Enlist physical properties of the enteric group of bacteria?
- (C) Answer in Detail : (Any One) 3
- (1) Discuss Photophosphorylation in Halobacterium
  - (2) Explain Iron bacteria
- (D) Write a note on : (Any One) 5
- (1) Discuss in detail Methanogens
  - (2) Discuss in detail patterns of Carbohydrate fermentation in lactic acid bacteria
- 5 (A) Answer the following : 4
- (1) Define active transport.
  - (2) Define phagocytosis.
  - (3) What do you mean by simple Diffusion?
  - (4) What is the function of ATPase enzyme?
- (B) Answer in Brief : (Any One) 2
- (1) What is quorum sensing?
  - (2) Enlist membrane lipids with examples
- (C) Answer in Detail : (Any One) 3
- (1) Explain mechano-sensitive channel
  - (2) Explain facilitated diffusion
- (D) Write a note on : (Any One) 5
- (1) Write a note on signal transduction.
  - (2) Draw and discuss in detail fluid mosaic model of bacterial cell membrane.