Seat No. : _____

NC-109

November-2022

B.Sc., Sem.-V

302 : Microbiology
(Bacterial Metabolism)

Time : 2½ Hours] **[Max. Marks : 70**

Instructions : (1) **All** questions are compulsory.

(2) Draw figures wherever necessary.

(3) Figures on right side indicate marks.

1. What is Enzyme ? Explain feedback regulation of enzyme with suitable example. **14**

OR

(A) Derive Michaelis Menten equation and write its limitation and importance. **7**

(B) Enlist the Energy rich compound present in the cell, why is ATP referred to as the universal energy currency ? **7**

2. Explain the Electron Transport Chain (ETC) with its diagram. **14**

OR

(A) Explain the substrate level phosphorylation with its significance. **7**

(B) Explain the beta oxidation of fatty acid with its ATP calculation. **7**

3. Explain the mode of ATP formation in nitrifying and sulfur bacteria. **14**

OR

(A) Explain bacterial photosynthetic pigments with its accessories. **7**

(B) Write a note on noncyclic photophosphorylation in bacteria. **7**

4. Enlist symbiotic and non-symbiotic nitrogen fixing bacteria and explain biological nitrogen fixation in detail with suitable diagram. **14**

OR

(A) Explain glyoxylate cycle with its significance. **7**

(B) Describe peptidoglycan biosynthesis. **7**

5. Answer in **one** or **two** line : (Any **seven**) 14

(1) Define redox potential giving one example.

(2) Define allosteric enzyme.

(3) Give full form of NAD and FAD.

(4) Write importance of HMP pathway.

(5) Give role of succinate dehydrogenase in ETC and citric acid cycle.

(6) Give one example each of bacterium and fungus used for ethanol production.

(7) What are photoautotrophs ?

(8) Give two examples of nitrogen oxidation bacteria.

(9) Write two names of halobacteria.

(10) Define anaplerotic reaction.

(11) What is bacteriorhodopsin ?

(12) Write two differences between gluconeogenesis and glycolysis.
