



Seat No. : _____

NA-106

November-2025

B.Sc., Sem.-V

MI-302 : Microbiology (Bacterial Metabolism)

Time : 2:30 Hours]

[Max. Marks : 70

- Instructions :**
- (1) All questions are compulsory.
 - (2) Figures on the right indicates marks.
 - (3) Mention correct question number against the answer.
 - (4) Draw figures wherever necessary.

1. How biochemical mutants and metabolic inhibitors can be used to study biosynthesis ? 14

OR

1. (A) Write a note on energy rich compounds. 7
- (B) Define enzyme. Explain regulation of enzyme activity by allosteric regulation. 7
2. Explain components of Electron Transport Chain (ETC) and their functions in oxidative phosphorylation. 14

OR

2. (A) Discuss major features including enzymes of TCA cycle. 7
- (B) Describe catabolism of amino acids by stickland reaction. 7
3. Explain the mode of ATP generation in iron and sulphur bacteria. 14

OR

3. (A) Write a note on photosynthetic pigments and apparatus in phototrophic eubacteria. 7
- (B) Describe non-cyclic photophosphorylation in bacteria. 7

4. Explain the process of assimilation of ammonia and molecular nitrogen. **14**

OR

4. (A) Define Biosynthesis. Describe the biosynthesis of saturated fatty acids. **7**

(B) Write a note on biosynthesis of peptidoglycan. **7**

5. Give short and specific answers in 1-2 lines only (any **seven**). **14**

(1) What is endothermic reactions ? Give one example.

(2) Write the two significance of Lineweaver-Burk plot.

(3) Draw the structure of NAD.

(4) Give two examples of bacteria used in lactic acid production.

(5) Give full form of KDPG. In which pathway it is used ?

(6) Write two major functions of ED pathway.

(7) Give importance each of forward and reverse electron transport chain.

(8) Give four examples of nitrogen fixing bacteria.

(9) Define halobacteria and give one example.

(10) Define anaplerotic reactions with one example.

(11) What is gluconeogenesis ? Give it's importance.

(12) Give full form of RUBISCO and give it's function.
