



Seat No. : _____

NG-113

November-2025

B.Sc., Sem.-V

DSC-C-MIC-352 T : Microbiology (Major)

(Bacterial Metabolism)

(As per NEP-2020)

Time : 2:00 Hours]

[Max. Marks : 50

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

1. Enlist various methods for studying biosynthesis in bacteria and describe any three of them. 10

OR

1. (a) Write a short note on the structure and functions of ATP in bacterial metabolism. 5
1. (b) Explain the significance of LB plot. 5

2. Write an explanatory note justifying the catabolic and anabolic role of TCA cycle in bacteria. 10

OR

2. (a) Write a brief note on beta-oxidation of fatty acids. 5
2. (b) Describe briefly anaerobic respiration of nitrate in prokaryotes. 5

3. Describe the generation of ATP and reducing power in Chemolithotrophs citing a suitable example. 10

OR

3. (a) Write a short note on physiological groups of Chemolithotrophs. 5
3. (b) Explain briefly cyclic photophosphorylation in phototrophic bacteria. 5

4. Explain the Calvin cycle and its significance in prokaryotes. **10**

OR

4. (a) Write a short note on Gluconeogenesis. **5**

4. (b) Describe briefly the mechanism for assimilation of sulphate in prokaryotes. **5**

5. Write short and specific answers of Any **10** in **1-2** lines only. **10**

(1) What is an endothermic reaction ?

(2) Define the Michaelis-Menton's constant K_m .

(3) Write any one mechanism used by bacterial cells to regulate metabolism.

(4) What is the net gain of ATP from glycolysis of glucose under anaerobic condition ?

(5) Write any one role of the proton motive force in bacterial cells.

(6) What is homolactic fermentation ?

(7) Write an example of accessory pigment found in phototrophs.

(8) Which electron donor is used by phototrophic bacteria during oxygenic photosynthesis ?

(9) What is the role of light harvesting complexes in phototrophs ?

(10) Write the full form of GOGAT enzyme.

(11) What are anaplerotic reactions ?

(12) Write one major advantage of the glyoxylate cycle.
