Seat No. : _____

MC-104

March-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. Explain enzyme kinetics and derive Michaelis-Menten equation. **14**

OR

1. (A) What are enzymes ? Explain regulation of enzyme by feed back inhibition. **7**
1. (B) Describe the role of biochemical mutants to study biosynthesis. **7**

2. Explain generation of proton motive force and it's role and mechanism of oxidative phosphorylation. **14**

OR

2. (A) Write a note on Ethanol Fermentation. **7**
2. (B) Define catabolism. Describe catabolism of glucose by ED pathway. **7**

3. Explain physiological groups in chemolithotrophs in detail. **14**

OR

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

4. What is biosynthesis ? Explain biosynthesis of saturated and unsaturated fatty acids. **14**

OR

4. (A) Write a note on assimilation of ammonia. **7**
4. (B) What are feeder pathways ? Give significance of glyoxylate cycle. **7**

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

(1) Define standard free energy change.

(2) What are energy rich compounds ? Give one significance of energy rich compounds.

(3) Give structure of NADP.

(4) Give two examples of bacteria used in butanediol fermentation.

(5) What is stickland reaction ?

(6) Define uncouplers. Give one example.

(7) What is reverse ETC ?

(8) Write two examples of halobacteria.

(9) Give function of two photosynthetic apparatus in phototrophic eubacteria.

(10) Draw structure of peptidoglycan.

(11) Write full form of Rubisco, Give one significance of Calvin cycle.

(12) What is Gluconeogenesis ? Give one importance.

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