Registration Number:

Date & session:

**ST JOSEPH’S UNIVERSITY, BENGALURU - 27**

**M. Sc MICROBIOLOGY – 2nd SEMESTER**

**END SEMESTER EXAMINATION: APRIL 2024**

**(Examination conducted in May-June 2024)**

**MB 8121: MICROBIAL PHYSIOLOGY**

**(For current batch students only)**

**Time: 2 hours Max Marks: 50**

**This question paper contains 2 printed pages and 4 parts**

**I. Answer any Five of the following 5X3=15**

1. What are stereoisomers? List the types of stereoisomers found in carbohydrates.

2. Name the carriers of peptidoglycan biosynthesis and state their functions.

3. What are heat shock proteins?

4. Classify lipids based on their chemical composition.

5. How does a ribozyme differ from an abzyme?

6. Is it possible to have photosynthesis without producing oxygen? Justify

7. Give one distinguishing feature of the Denovo pathway and Salvage pathway of nucleotide biosynthesis.

1. **Answer any Two of the following 2X5=10**

8. Elaborate on the features of α-helix and β-sheet of proteins.

9. How can competitive and non-competitive inhibition be distinguished in terms of Km?

Show graphically the Lineweaver Burk plot for competitive inhibition.

10. Which two enzymes of Glyoxylate cycle are not found in the citric acid cycle? Write

down the reaction catalyze by these two enzymes.

**III. Answer any Two of the following 2X10=20**

11. a. How is starting material regenerated in the Calvin cycle? 5

b. Discuss the catalytic mechanism of covalent catalysis. 5

12. a. What is the product of alcohol fermentation? Elaborate the steps that lead to its formation. 5

b. Illustrate the Urea cycle.

13. a. Elaborate on the forces that stabilize the double helix DNA. 5

b. “Gluconeogenesis and glycolysis are not identical pathways running in opposite

directions.” Explain the given statement. 5

1. **Answer the following 1X5=5**

14. a. You are planning to go on a strenuous hike and are advised to eat plenty of high

carbohydrate foods, such as rice and bread, for several days beforehand. Suggest a

reason for the advice. 3

b. An enzyme activity is optimum at a temperature of 25oC. Draw inference when the

temperature the solution is increase to 100oC. 2