QP Code: U25C041

Reg. No : .....

Name : .....

ST MARY'S COLLEGE (AUTONOMOUS), THRISSUR-20

III SEMESTER (FYUGP) DEGREE EXAMINATIONS, OCTOBER 2025
MBY3MN200 : MICROBIAL METABOLISM
2024 Admission Onwards
(Credits: 4)

Time: 2 Hours **Maximum Marks: 70**

Section A

*Answer **all**. Each question carries **3** Marks.* ***(Ceiling: 24 Marks)***

1. Name two nitrogen-fixing microorganisms.
2. What are the enzymes involved in glycolysis?
3. What would happen to the energy production of a microorganism if its NAD+ were not regenerated after glycolysis?
4. Name any three methanogens.
5. Compare and contrast lithotrophs and organotrophs.
6. Distinguish group translocation from active transport, focusing on the nature of the solutes transported.
7. Explain the role of oxygen in aerobic respiration.
8. Explain why yeast consumes less sugar under aerobic conditions than the anaerobic conditions.
9. Chemolithotrophs need to oxidize more substrate to meet their energy needs. Justify.
10. Define heterofermentative pathway and name one example of a bacterium that uses this pathway.

Section B

*Answer **all**. Each question carries **6** Marks.* ***(Ceiling: 36 Marks)***

11. Differentiate between uniport, symport and antiport with examples.
12. Explain the relationship between the proton gradient and the function of ATP synthase.
13. Give three examples of branched fermentation pathways.
14. Describe the function of an electron donor in photosynthesis.

Turn Over

15. Evaluate the Lactic acid fermentation pathways, detailing the enzymes involved.
16. Analyze the differences between active transport and facilitated diffusion.
17. The ATP yield from FADH is less than that from NADH, why is it so?
18. How the mixed end products of heterofermentative fermentation might be more desirable for certain food products like sourdough or sauerkraut.

Section C

*Answer **any one**. Each question carries **10** Marks.* ***(1x10=10marks)***

19. Give details on the different groups of phototrophic microorganisms.
20. Compare and contrast the mechanisms of light-harvesting in purple bacteria and cyanobacteria.

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