



'समानो मन्त्रः समितिः समानी'

UNIVERSITY OF NORTH BENGAL

B.Sc. Honours 3rd Semester Examination, 2022

CC5-MICROBIOLOGY

MICROBIAL PHYSIOLOGY AND METABOLISM

Time Allotted: 2 Hours

Full Marks: 40

The figures in the margin indicate full marks.

1. Answer any **five** from the following: 1×5 = 5
 - (a) Define water activity.
 - (b) What is facilitated diffusion?
 - (c) What will happen to a cell treated with lysozyme and placed in isotonic solution?
 - (d) What is cardinal temperature?
 - (e) What are chaperones?
 - (f) Define anoxygenic photosynthesis.
 - (g) State chemolithotrophy.
 - (h) Give an example of N₂-fixing bacterium.

2. Answer any **three** from the following: 5×3 = 15
 - (a) Write short notes on: 2½ × 2 = 5
 - (i) Dissimilatory nitrate reduction
 - (ii) Oxidative phosphorylation.
 - (b) Explain how proton motive force (PMF) related to the functioning of Electron transport chain with suitable diagram. 5
 - (c) Briefly discuss the phases of growth. 5
 - (d) How does pH affect the microbial growth? 5
 - (e) What are the differences between passive and facilitated diffusion pathway? 5

3. Answer any **two** from the following: 10×2 = 20
 - (a) Discuss the various stages of aerobic respiration. 10
 - (b) Elaborate group translocation. Discuss the role of superoxide dismutase and catalase. 7+3
 - (c) Write a note on the role of nitrogenase in biological N₂-fixation. State the differences between anoxygenic and oxygenic photosynthesis. 6+4
 - (d) Explain the molecular adaptations in thermophiles and acidophiles. 5+5

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