



'সমানো মন্ত্র: সমিতি: সমানী'

## UNIVERSITY OF NORTH BENGAL

B.Sc. Honours Part-III Examination, 2022

### MICROBIOLOGY

#### PAPER-IX

Time Allotted: 4 Hours

Full Marks: 80

*The figures in the margin indicate full marks.*

1. Answer the following questions: 1×16 = 16
- (a) Name one rare cutter restriction enzyme.
  - (b) What is VNTR?
  - (c) Mention the sequence site of Eco RI digestion.
  - (d) Who developed PCR?
  - (e) What is reporter gene?
  - (f) What is shuttle vector?
  - (g) What is homopolymer tailling?
  - (h) What is PHB?
  - (i) Define ammensalism.
  - (j) Define recalcitrant compound.
  - (k) What is reductive dechlorination?
  - (l) Define ecological niche.
  - (m) Name one enzyme involved in petroleum degradation.
  - (n) What are extremozymes?
  - (o) State the role of Omph protein.
  - (p) What are methanogens?
2. Answer any **four** of the following: 8×4 = 32
- (a) Describe the role of pBR322 as a cloning vector. 8
  - (b) Describe the adaptive feature of a barophilic bacteria. 8
  - (c) Describe the salient features of wetland ecosystem. 8
  - (d) Discuss the steps and microorganism involved in sulfur cycle. 8
  - (e) Discuss in detail the steps involved in biogas production from agricultural wastes. 8
  - (f) Describe the various techniques involved in determining the microbial community from a natural environment. 8

3. Answer any *two* of the following: 16×2 = 32
- (a) Describe in detail, the process of Southern Blotting. 16
  - (b) Discuss the various steps involved in nitrogen cycle. 16
  - (c) Describe in detail, the mechanism involved in the biodegradation of petroleum products. 16
  - (d) Describe the pathway and the enzymes involved in the degradation of herbicide 2,4-D. 16

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