



'সমানো মন্ত্র: সমিতি: সমানী'

UNIVERSITY OF NORTH BENGAL

B.Sc. Honours 6th Semester Examination, 2023

CC14-MICROBIOLOGY

(RECOMBINANT DNA TECHNOLOGY)

Time Allotted: 2 Hours

Full Marks: 40

The figures in the margin indicate full marks.

1. Answer any **five** of the following: 1×5 = 5
 - (a) What are reporter genes?
 - (b) What is the difference between a probe and a primer?
 - (c) State the function of S1 nuclease.
 - (d) How is cloning vector different from expression vector?
 - (e) What is the importance of secondary antibody in the identification of recombinant clone?
 - (f) What are cosmids?
 - (g) What is the role of ethidium bromide in visualization of nucleic acid?
 - (h) Why is the DNA of a bacterium not degraded by its own endonuclease?

2. Answer any **three** of the following: 5×3 = 15
 - (a) What is chromosome jumping? How is it advantageous? 3+2
 - (b) What is the basic principle of microarray technology? Mention the applications of this technology. 3+2
 - (c) You have purified a protein to homogeneity. How can the molecular weight of the protein be determined? 5
 - (d) Write a short note on site-directed mutagenesis.
 - (e) Who invented PCR? Name two enzymes used in PCR with their source organisms. State the basic differences between PCR and RT-PCR. 1+2+2

3. Answer any **two** of the following: 10×2 = 20
 - (a) Why are plasmids used as a suitable cloning vector? How is recombinant DNA technology used in insulin production? 4+6
 - (b) Explain the methodology and applications of Southern Blotting. How can you design a radioactive probe? 7+3
 - (c) What is gene therapy? Discuss its methodology and application. 2+5+3
 - (d) Write short notes on: 5+5
 - (i) YACs
 - (ii) *Agrobacterium*-mediated delivery.

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