



‘समानो मन्त्रः समितिः समानी’

UNIVERSITY OF NORTH BENGAL
B.Sc. Honours 6th Semester Examination, 2025

CC13-MICROBIOLOGY

MEDICAL MICROBIOLOGY

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 is the difference between epidemic and pandemic?
 - (b) What is XDR?
 - (c) Name one antibacterial agent which inhibits protein synthesis.
 - (d) What is immunofluorescence?
 - (e) What are nosocomial infections?
 - (f) Name two normal microflora of skin.
 - (g) What are virulence factors?
 - (h) Define toxigenicity.

2. Answer any **three** of the following: 5×3 = 15
 - (a) What are toxoids? Differentiate between endotoxin and exotoxin with example. 2+3
 - (b) Discuss clinical sample collection and transport methods. 5
 - (c) Discuss causative agent, symptoms, transmission and prophylaxis of tuberculosis. 5
 - (d) Describe the symptoms, mode of transmission, prophylaxis and control of Histoplasmosis. 5
 - (e) Explain mode of action of Azidothymidine. Add a note on Japanese Encephalitis. 3+2

3. Answer any **two** of the following: 10×2 = 20
 - (a) Describe how do PCR and DNA probes help in disease diagnosis. 5+5
 - (b) Discuss in detail with examples the opportunistic infections. Add a note on MRSA. 6+4
 - (c) Discuss the principles and types of ELISA. Add a note on how ELISA helps in disease diagnosis. 8+2
 - (d) Discuss symptoms, transmission, prophylaxis and control of AIDS. 2+2+2+4

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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 is meant by adaptor?
 - (b) What is a reporter gene?
 - (c) Name one type III restriction enzyme.
 - (d) Why is agarose used in agarose gel electrophoresis instead of agar?
 - (e) What is primer walking?
 - (f) What is blue-white screening?
 - (g) What is the function of DNA ligases?

2. Answer any **three** of the following: 5×3 = 15
 - (a) Discuss liposome and viral mediated gene delivery. 3+2
 - (b) Write down the construction and application of YAC. 5
 - (c) State the differences between genomic and C-DNA libraries. 5
 - (d) Discuss about Northern blotting technique. What is transfection? 4+1
 - (e) Write short note on pBR322 with suitable diagram. 5

3. Answer any **two** of the following: 10×2 = 20
 - (a) What is cloning? Elaborate the construct and functioning of SV40 based expression vectors. 3+7
 - (b) Describe Sanger's method of DNA sequencing. Add a note on shotgun sequencing. 6+4
 - (c) What are the challenges encountered while expressing mammalian genes in prokaryotes? Write down the role of following enzymes in gene cloning 4+6
 - (i) Terminal Transferase (ii) Phosphatases (iii) Kinases.
 - (d) Write short notes on: 5+5
 - (i) DNA Microarray
 - (ii) Real time PCR.

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