



'সমানো মন্ত্র: সমিতি: সমানী'

**UNIVERSITY OF NORTH BENGAL**

B.Sc. Honours 4th Semester Examination, 2023

**GE2-P2-MICROBIOLOGY**

Time Allotted: 2 Hours

Full Marks: 40

*The figures in the margin indicate full marks.*

**The question paper contains PAPER-3 & PAPER-4. The Candidates are required to answer any *one* from the *two* papers. Candidates should mention it clearly on the Answer Book.**

**PAPER-3: (BACTERIOLOGY AND VIROLOGY)**

1. Answer any **five** questions from the following: 1×5 = 5
  - (a) What is CFU? 1
  - (b) Name one antiport system. 1
  - (c) What is the average pore size of membrane filters? 1
  - (d) What is the function of lysozyme? 1
  - (e) Name a virus with pleomorphic capsid. 1
  - (f) Name two oncogenic DNA viruses. 1
  - (g) What is bacteriocin? 1
  - (h) What is F-Plasmid? 1
  
2. Answer any **three** questions from the following: 5×3 = 15
  - (a) What is viral symmetry? What do you mean by helical symmetry? Name one naked and one enveloped helical virus. 2+2+1
  - (b) What are interferons? Classify it. 2+3
  - (c) Name one antiprotozoal drug. Write the mechanism of action of interferon. 1+4
  - (d) Write down the features of prions. 5
  - (e) What is lytic-lysogenic switch? 5
  
3. Answer any **two** questions from the following: 10×2 = 20
  - (a) How do Archae differ from bacteria? Illustrate the structure of cell wall of Archae. What are two examples of Archaeobacteria? 4+4+2

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|---|-----|
| (b) How does cytoplasmic membrane act as transporter? State the major differences between Gram +ve and Gram –ve bacterial cell wall.      | 3+7 |
| (c) Illustrate the structure of prokaryotic ribosome by Stoffler & Wittmann's model. How does it differ from that of eukaryotic one?      | 6+4 |
| (d) Give the characteristic features of the different classes of human interferons. Describe any three biological effects of interferons. | 6+4 |

**PAPER-4: (MEDICAL MICROBIOLOGY AND IMMUNOLOGY)**

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| 1. Answer any <i>five</i> questions from the following:   | 1×5 = 5                     |
| (a) Define invasion.  |                             |
| (b) What do you understand by nosocomial infection?   |                             |
| (c) Define virulence.   |                             |
| (d) Name two opportunistic organism. What is the role of thymosin?  |                             |
| (e) What is epitope?  |                             |
| (f) Name one autoimmune disease.  |                             |
| (g) How antigen differs from immunogen?   |                             |
| (h) Name one protein synthesis inhibitor.   |                             |
| 2. Answer any <i>three</i> questions from the following:  | 5×3 = 15                    |
| (a) Name two fungal diseases, their causative agent, symptoms and treatment of humans.                                    | 5                           |
| (b) Write a brief note on SCID mice.  | 5                           |
| (c) Discuss the structure and function of macrophage and NK cells.  | $2\frac{1}{2}+2\frac{1}{2}$ |
| (d) Describe various methods of infection transmission.   | 5                           |
| (e) Classify antibodies and state their role.   | 5                           |
| 3. Answer any <i>two</i> questions from the following:  | 10×2 = 20                   |
| (a) Write down the pathogenesis and treatment of Cholera.   | 5+5                         |
| (b) Describe one primary and one secondary immune organ with diagram.   | 5+5                         |
| (c) Describe mode of action of Amphotericin B and Acyclovir. Add a note on cell-mediated immune response.                 | 3+3+4                       |
| (d) State the features of a potent antigen. Write a note on types and importance of normal microbial flora of human body. | 5+5                         |

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