



'সমানো মন্ত্র: সমিতি: সমানী'

UNIVERSITY OF NORTH BENGAL
B.Sc. Honours 2nd Semester Examination, 2023

GE1-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** of the following: 1×5 = 5
 - (a) What is glycocalyx?
 - (b) Why is bacterial endospore more resistant to heat compared to vegetative cells?
 - (c) What is a mordant?
 - (d) What are interferons?
 - (e) What is Peritrichous flagella?
 - (f) What are hopanoids?
 - (g) What is diauxic growth?
 - (h) Define multiplicity of infection (MOI).

2. Answer any **three** of the following: 5×3 = 15
 - (a) What components constitute the LPS layer of gram-negative bacteria? Explain. 5
 - (b) Differentiate between defined and complex media. Give an example of enrichment culture media with the components and their roles. $2\frac{1}{2} + 2\frac{1}{2}$
 - (c) Discuss the role of interferon during viral infection. 5
 - (d) Write about the physiological adaptations of halophiles. 5
 - (e) Distinguish between the cell membrane of eubacteria and archaebacteria. 5

3. Answer any **two** of the following: 10×2 = 20
 - (a) Describe the structural detail of TMV and Cauliflower Mosaic Virus. 5+5
 - (b) Give an account of ecological significance and morphology for the following – 5+5
 - (i) Rickettsia
 - (ii) Mycoplasma
 - (c) Illustrate the development of endospore formation with suitable diagram. State the methods for stocking of pure bacterial cultures. 6+4
 - (d) Discuss the ultrastructure of 50S ribosome with suitable diagram according to Stoffer's model. Write in brief about nucleoid in bacterial cell. 6+4

PAPER-4

(MEDICAL MICROBIOLOGY AND IMMUNOLOGY)

1. Answer any *five* of the following: 1×5 = 5
- (a) Name the causative agent of giardiasis.
 - (b) Which immune cell is mainly responsible for type I hypersensitivity?
 - (c) What is immunogenecity?
 - (d) Name one causative bacterial agent that infects GI tract.
 - (e) What is the function of NK cell?
 - (f) What is meant by avidity of an antibody?
 - (g) Generally penicillin is not effective against mycoplasma. Why?
 - (h) What is paratope?
2. Answer any *three* of the following: 5×3 = 15
- (a) With suitable example discuss the mode of action of an antibiotic that can inhibit cell membrane function. 5
 - (b) Discuss the mode of action of the antiviral drug Amantadine. 5
 - (c) What is Opportunistic infection? Discuss the process of culturing of clinical samples. 1+4
 - (d) Write in brief about bone marrow and lymph node acting as immune organ. 5
 - (e) State the differences between humoral and cell-mediated immune response. 5
3. Answer any *two* of the following: 10×2 = 20
- (a) State the characteristics of an antigen. Write in brief about B-cell epitopes. 6+4
 - (b) Describe with suitable diagram the process of ELISPOT technique. What is autoimmunity? State the types of autoimmunity. 5+2+3
 - (c) Describe in brief two types of mycoses. List two bacterial and two viral diseases stating their causative agents. 6+4
 - (d) Discuss the role of normal microflora of urogenital tract and skin of human. 5+5

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