



‘समानो मन्त्रः समितिः समानी’

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

CC4-MICROBIOLOGY

(VIROLOGY)

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) Define viroid.
 - (b) What are long terminal repeats?
 - (c) State the genome nature of TMV.
 - (d) Define PFU.
 - (e) Name two diseases caused by prions.
 - (f) What is temperate phage?
 - (g) What are Proto-oncogenes?
 - (h) State the function of Cro-protein.

2. Answer any **three** of the following: 5×3 = 15
 - (a) Explain with suitable diagram the process of phage display technique. 5
 - (b) With suitable diagram describe the replication strategies of phi X174. 5
 - (c) Write down the application of viral vectors in gene therapy. 5
 - (d) Describe the persistent and non persistent mode of viral transmission. 5
 - (e) Describe with examples and figures the various capsid symmetries found in viruses. 5

3. Answer any **two** of the following: 10×2 = 20
 - (a) Explain the salient features of alternate splicing of HIV and overlapping genes of Hepatitis B. Give one example each of DNA and RNA oncogenic virus mentioning their genes responsible for tumour formation. 4+4+2
 - (b) Illustrate the replicative cycle of T-even phage in relation to *E. coli*. Mention the significance of lysogeny. 6+4
 - (c) Explain about non-segmented genome of Picorna viruses. Differentiate between oncogene and proto-oncogene. 5+5
 - (d) Give an account on interaction of viruses with cellular receptors and their entry within a host. 5+5

—x—



‘समानो मन्त्रः समितिः समानी’

UNIVERSITY OF NORTH BENGAL

B.Sc. Honours 2nd Semester Examination, 2023

CC3-MICROBIOLOGY

(BIOCHEMISTRY)

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 epimerism?
 - (b) Define entropy.
 - (c) Name one water-soluble vitamin.
 - (d) What is Rheumann purple complex?
 - (e) Why proline is referred to as imino acid?
 - (f) Define activation energy of Enzyme.
 - (g) What do you mean by liposome?
 - (h) Write the general structure of sphingomyelins.

2. Answer any **three** of the following: 5×3 = 15
 - (a) Write a short note on Gramicidin. 5
 - (b) Describe the general structure and functions of phosphoglycerides. 5
 - (c) Elucidate different types of chemical bonds involved in the spatial structure of proteins. 5
 - (d) Write a short note on chitin. 5
 - (e) Classify enzymes based on reaction they catalyses. 5

3. Answer any **two** of the following: 10×2 = 20
 - (a) Explain titration curve of any one deprotic amino acid. State two significances of titration curve. What is competitive inhibition of enzymes? 6+2+2
 - (b) Write short notes on: 5+5
 - (i) Human Haemoglobin structure
 - (ii) 1,3- Bisphosphoglycerate
 - (c) Discuss briefly about multienzyme complex. Describe the sources and biological functions of Vitamin D and Vitamin A. 5+5
 - (d) State the differences between saturated and unsaturated fatty acids. What is saponification? Illustrate the functions of lipids in cellular signaling. 3+2+5

—x—