

B. TECH
(SEM VIII) THEORY EXAMINATION 2022-23
VIROLOGY

Time: 3 Hours

Total Marks: 100

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt all questions in brief. 2 x 10 = 20

- (a) How viruses are different from bacteria?
- (b) What is viral envelope? What are its functions?
- (c) What are the types of viral infections?
- (d) What are the symptoms of a viral infection?
- (e) Classify viruses on the basis of chemical composition and their mode of replication.
- (f) How virus nomenclature is carried out?
- (g) Differentiate between positive and negative strand RNA viruses.
- (h) What do you understand by reverse transcription?
- (i) What are the characteristics of vaccines?
- (j) What is an adjuvant and why is it added to a vaccine?

SECTION B

2. Attempt any three of the following: 10x3=30

- (a) What are the methods to isolate virus or its components? Briefly describe them.
- (b) What are the different defense mechanisms viruses have that help them overcome antibodies?
- (c) Describe-
 - (i) Difference between RNA and DNA viruses
 - (ii) Large DNA viruses
- (d) Differentiate between virus and retroviruses. Describe the structure and replication of retroviruses. What do you understand by retroviral vectors?
- (e) Write short note on-
 - (i) Antiviral interferons
 - (ii) Mode of action of antivirals

SECTION C

3. Attempt any one part of the following: 10x1=10

- (a) What is the typical structure of a virus? What are the different types of capsids?
- (b) Write short note on-
 - (i) Viral genomes
 - (ii) Virus history

4. Attempt any *one* part of the following: 10x1=10

- (a) What is a viral infection? Explain the life cycle of virus in a host system.
- (b) Explain the techniques used to diagnose viral infections.

5. Attempt any *one* part of the following: 10x1=10

- (a) Describe the structure, replication and infection cycle of dengue virus.
- (b) Write short note on-
 - (i) Pox virus
 - (ii) West Nile virus

6. Attempt any *one* part of the following: 10x1=10

- (a) Describe the structure, replication and infection cycle of influenza virus.
- (b) Write short note on-
 - (i) Bird flu
 - (ii) AIDS

7. Attempt any *one* part of the following: 10x1=10

- (a) Describe-
 - (i) Antiviral screening and library construction
 - (ii) Use of antisense RNA and ribozymes as viral vaccines
- (b) What are the different types of vaccines? Why viral diseases are treated through vaccines?

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