

# RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. THIRD SEMESTER EXAMINATION, MARCH 2021

SECOND YEAR [BATCH 2019-22]

MICROBIOLOGY [Honours]

Paper : V [CC 5]

Date : 12/03/2021

Time : 11.00 am – 1.00 pm

Full Marks : 50

## Group - A

Answer **any five** questions of the following :

[5×2]

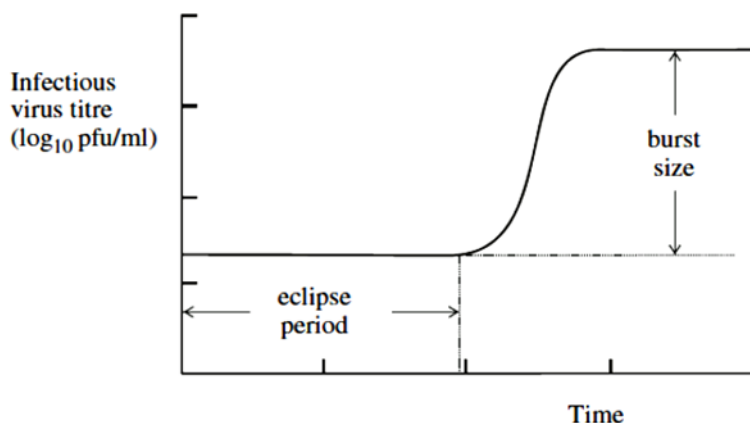
1. a) What is ICTV?
- b) What are prions?
- c) What is antigenic drift?
- d) Give one example of each: i) single stranded RNA phage virus ii) double stranded DNA virus having reverse transcriptase enzyme.
- e) What do you mean by proto oncogene and oncoprotein?
- f) What is subunit vaccine?
- g) 'HIV is a hard target for vaccination' – explain.
- h) Give four major examples of viral cancer.

## Group - B

Answer **any four** question of the following :

[4×10]

2. a) How does animal cell culture is useful for detection of virus infectivity?
  - b) Explain the replication process of influenza A virus inside the host cell nucleus.
  - c) What is the various root for inoculating viruses in animals?
  - d) Mention name of few vectors responsible for plant virus transmission.
3. a) Mention the difference between acute and latent infection process of virus.
- b) Explain the nature of the following graph to find the burst size.



- c) Differentiate between lytic and lysogenic cycle of phage viruse.
- d) What is Baltimore classification of virus?

[2+4+2+2]

4. a) Explain the mechanism of reverse transcriptase enzyme in retroviruses.
- b) Mention the genome organization features of SARS CoV 2.
- c) Rhabdovirus genome has sequence like 3' –N-P-M-G-L- 5'. Mention the functional significance of each gene. [4+4+2]
5. a) Describe major strategies for antiviral therapy.
- b) 'Reverse transcriptase inhibitors are better therapeutic agents than CD4 receptor blockers for HIV infection' – explain.
- c) State the mode of action of nucleoside analogue reverse transcriptase inhibitors (NRTIs). [4+3+3]
6. a) 'v-SRC is necessary for Rous Sarcoma Virus (RSV) mediated oncogenesis' – design an experiment to establish this.
- b) Describe different events that can convert a proto oncogene to an oncogene.
- c) 'Regulators of cell cycle checkpoints can be a proto oncogene' – explain. [4+3+3]
7. a) Write a short note on chromosome translocation in Burkitt's lymphoma.
- b) 'A packaging construct (helper) is required for cloning using viral vector' – explain.
- c) Mention the key properties of a typical viral vector. [4+3+3]

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