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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2025

MSc (Micro)-I Semester

COURSE CODE (CREDITS): 20B1WBI831 (2-0-0) MAX. MARKS: 15

COURSE NAME: VIROLOGY

COURSE INSTRUCTORS: Dr. Tyson MAX. TIME: 1 Hour

Note: (a) All questions are compulsory.

(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

Q.No	Question	Marks
Q1	Viruses display diverse replication strategies, which are reflected in their Baltimore classification. Critically, analyze how the Baltimore system integrates molecular biology principles to classify viruses.	3
Q2	The study of bacteriophages revolutionized molecular biology and virology. a) Explain how the concepts from one-step growth curve experiments provide insights into viral gene expression and assembly. b) You isolate two viruses from the same host: Virus A has a double-stranded DNA genome and Virus B has a positive-sense RNA genome. Using the Baltimore classification, compare their replication strategies. How would differences in their replication cycles affect the shape of their one-step growth curves?	2+3
Q3.	Phage life cycle analysis is powerful tools in virology. Compare the evolutionary advantages and disadvantages of lytic vs lysogenic cycles in bacteriophages.	3
Q4.	A researcher dilutes a viral stock and infects a lawn of susceptible host cells. After incubation, distinct clear zones (plaques) appear on the plate. a) What biological process leads to the formation of these plaques? b) How can this experimental setup be used to calculate the concentration of infectious virus particles in the original stock? Illustrate with a formula or example.	2+2