12 – /3 30

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

Make-up Examination-Nov-2025

M.Sc.-I Semester (Microbiology)

COURSE CODE (CREDITS): 21MSMB112 (3) MAX. MARKS: 25

COURSE NAME: Molecular Biology

COURSE INSTRUCTORS: Dr. Anil Kant MAX. TIME: 1 Hour 30 Minutes

Note: 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
Q.1	a) The subject matter of Molecular Biology appropriately represented by the Central dogma of molecular biology? Justify. b) Enlist different classes of biological information transfer and correlate these with biological processes. c) Illustrate any two the experiments which proved that replication proceeds bidirectionally from replication fork	6
Q.2	Write name of enzyme / protein performing given function or key function performed given enzymes/protein/subunit in E.coli replication and transcription. Also mention their enzymatic activity or key features responsible for function. i) Removal of RNA primers ii) γ Complex of DNA pol III, iii) DNA polymerase γ, iv) β and β' subunit of RNA polymerase v) Dna B protein	5
Q.3	**Do any three of following** a) Explain Thermal denaturation and renaturation profile of DNA, RNA in detail? b) Why single stranded DNA and RNA absorb more UV light compared to Double stranded DNA. Explain how DNA/RNA can be quantified on the basis of spectrophotometric properties? c) What is the effect of alkali on nucleic acids? Differentiate the effect on DNA and RNA and attribute reasons. d) Why linear DNA cannot be replicated till the end? Explain two mechanisms that exist in eukaryotic organisms to obviate the problem of chromosome shortening over the generations.	9
Q.4	Explain with help of proposed models how the sigma factor helps *E. coli* RNA polymerase to find the promoter. Make a list of different types of sigma factors found in *E .coli* and type of gene theory transcribe	5

82/