JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -1 EXAMINATION- 2025
M.Sc.(Microbiology)-I Semester (BT))

COURSE CODE (CREDITS):21MS1MB112(3) MAX. MARKS: 15
COURSE NAME: Molecular Biology
COURSE INSTRUCTORS:Dr Anil Kant 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	Questions	Marks
Q1	**Answer any six of following questions in 3 to 5 line only** a. The subject matter molecular biology overlaps with some other disciplines and progress in this area can be attributed to development of new technologies by chemists and physicists. Justify the statement. b. Briefly state the significance of following milestone discoveries, also include name the scientists and year i) isolation of nucleic acid ii)Southern hybridization iii) DNA sequencing c. State how replication is carried out by DNA polymerases given the fact that it can add nucleotides to preexisting 3'OH end only. Name the other enzyme involved and the gene which encodes it. d. Write briefly about how it was proved that DNA polymerase III is true replicate in *E.coli*. e. State two functions of DNA polymerase I in *E. Coli* replication. f. Why is single stranded DNA said to be hypochromic compared to double stranded DNA? g. What would be concentration of dsDNA if the original sample diluted 5 times was found to exhibit absorbance of 0.75 at λ=280 nm of UV.	6
Q2	a. Briefly explain Avery, MacLeod and McCarty Experiment or Harshey and Chase experiment conducted to prove that DNA is the genetic material. b. Briefly explain following properties of nucleic acids and conditions under which these are exhibited i) Denaturation ii) Renaturation and difference between DNA and RNA renaturation iii) Hybridization iv) Intercalation	5
Q3.	State the functions and significance of any four of following proteins / enzymes /subunits / activities and name of gene which encodes theses wherever applicable i) DnaA, DnaB and DnaC proteins ii)Three subunits forming core DNA pol III iii) β subunit and γ complex of DNA pol III iv) 3'→5 Exonuclease Activity of DNA polymerases v) SSB protein and DNA topoisomerase	4