

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- 2024

M.Sc.-I Semester (MB)

COURSE CODE (CREDITS): 21MS1MB112 (3)

MAX. MARKS: 25

COURSE NAME: Molecular Biology

COURSE INSTRUCTORS: Dr Anil Kant

MAX. TIME: 1 Hour 30 Minutes

*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	<p>a. Explain three different enzymatic activities found in DNA polymerases along with their significance.</p> <p>b. Argue with help of facts and experimental evidence which prove that DNA polymerase I is not a true replicase in <i>E. coli</i>.</p>	5
Q.2	<p>Attempt any two of following</p> <p>a. Explain Termination of DNA replication in <i>E. coli</i>?</p> <p>b. What are “intrinsic” and “rho dependent” terminators of transcription in <i>E. coli</i>? Explain the structural features/components and mechanism of termination of one of these.</p> <p>c. Recognise different subunits of DNA Polymerase III and their key function. Draw a suitable diagram.</p>	5
Q.3	<p>Assign the key function to enzymes or proteins mentioned below in <i>E. coli</i> replication. Also mention their enzymatic activity or key features responsible for function. i) DnaA protein ii) DnaB protein iii) SSB protein iv) Gyrase v) DnaG or Primase</p>	5
Q.4	<p>Figure out the unique aspects of Eukaryotic replication? Discuss unique structure of telomeres and mechanisms which ensure that telomeres are not shortened over generations?</p>	5
Q..5	<p>Discuss bacterial RNA polymerase holoenzyme (<math>\alpha \beta \beta' \omega \sigma</math>) in detail assigning specific roles of each subunit. Also mention various sigma factors found in <i>E. coli</i> and relate these with specific types of genes transcribed by these.</p>	5