

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- APRIL-2025

COURSE CODE (CREDITS): 18B11BI412 (3)

MAX. MARKS: 25

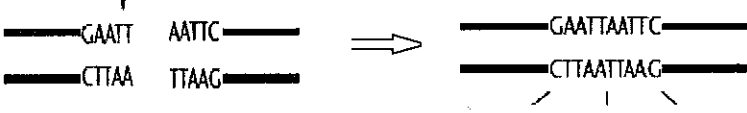
COURSE NAME: GENETIC ENGINEERING AND GENOMICS

COURSE INSTRUCTORS: DR. JATA SHANKAR

MAX. TIME: 1 Hour 30 Min

Note: (a) All questions are compulsory.

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

Q.No	Question	CO	Marks
Q1	What is the genome size of <i>human genome</i> , and how many protein-coding genes are estimated to be present in its genome? Based on this information, how can the gene density be calculated?	1	2.5
Q2	Identify the enzymes involved in the given process and explain their mechanisms of action. 	2	2.5
Q3	What are the various types of restriction endonucleases, and what are the key points of DNA polymerase? Additionally, illustrate the recognition site of EcoRI.	1	2.5
Q4	The 2µm plasmid is a circular, extrachromosomal DNA found in <i>Saccharomyces cerevisiae</i> (budding yeast). Draw the structure of 2µm plasmid present yeast cells and their salient features?	1	2.5
Q5	Explain the principle and methodology of Sanger sequencing. How does this technique enable DNA sequencing, and what are its key components, steps, and applications in genetic research?	3	5
Q6	Short question on a. Structure of pBR322 b. Describe sequence alignment and mapping c. Phred Score d. Open reading frame (ORF)	2	10