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

COURSE CODE (CREDITS):20MS1BT211 MAX. MARKS: 15
COURSE NAME: Genetic Engineering
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
Q.1	**Do any four of following questions** a. Briefly explain key steps involved in genetic engineering of an organism. b. Write a brief note on development of golden rice, including points; purpose, metabolic pathway, Genes their sources c. What are the features of recognition sites of type II restriction enzymes? Explain the basis of construction of recombinant DNA using restriction enzymes? d. Let you have to label DNA i) at 5'end ii) at 3'end. Outline the procedure and explain the properties of enzymes to be used. e. What prevents direct cloning of PCR products? What is T-vector? How it was designed.	6
Q.2	**Do any four of following questions** a. Let you are interested to insert a DNA fragment cleaved with restriction enzyme Pst I in a vector which is linearized with HindIII. Outline the procedure highlighting its basis, and tools you will employ to do it. b. You need to convert staggered ends of a DNA fragments into blunt ends. How it can be done by using two different enzymes. Also explain the properties and sources of the enzymes to be used. c. What steps and precautions should be taken to avoid nonspecific amplification during i) primer designing ii) Conducting PCR reaction . d. What is the melting temperature of PCR primers? Estimate melting temperature of a primer with given sequence GATATTGACGATAGACTACAGTACTGC	6
Q.3	**Do any four of following questions** Give two examples in case of each of following along with purpose, gene transferred / trait modified i) Transgenic pig and Goat ii) Transgenic fish iii) Transgenic chicken and mice iv) Transgenic Rose and apple	3