JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
Supplementary Examination- 2026
B.Tech-V Semester (BT)

COURSE CODE(CREDITS):18B11BT512 (4) **MAX. MARKS: 75**
COURSE NAME: Genetic Engineering
COURSE INSTRUCTORS:Dr. Anil Kant **MAX. TIME: 2 Hours**

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	a. State and outline four abstract objectives of genetic engineering. b. Analyze why gene cloning, recombinant DNA technology and genetic engineering are often used synonymously. c. Critically justify how genetic engineering differs from conventional breeding. d. Recognize and explain major steps involved in genetic engineering. e. Explain the phenomenon of host restriction and modification.	CO-1	5x3=15
Q2	a. Analyze and justify ideal characteristics of cloning vectors. b. Compare Type I, II and III restriction enzymes and assess why Type II are preferred? c. Describe enzymatic activity and application of alkaline phosphatase. Justify use of shrimp alkaline phosphatase. d. Propose strategies to prevent self-ligation of vectors.	CO-2	4x5=20
Q3	a. Differentiate cloning and expression vectors. Describe functional modules and working of pET system and draw well labeled with a diagram.	CO-3	10
Q4	a. Demonstrate whole genome shotgun approach to whole genome sequencing.	CO-4	10
Q5	a. Recall development of Golden Rice including objectives, pathway, genes modified and updates on commercialization. b. Recognize the contribution of genetic engineering in the area of healthcare and medicines with examples?	CO-5	2x5=20