JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -2 EXAMINATIONS-2024
M.Tech-II Semester (BT)

COURSE CODE (CREDITS): 14M11BT213 (3)   MAX. MARKS: 25

COURSE NAME: FUNCTIONAL GENOMICS

COURSE INSTRUCTOR: DR JATA SHANKAR   MAX. TIME: 1 Hour 30 Min

Note: All questions are compulsory. Marks are indicated against each question in square brackets.

Q1. In the Human genome repetitive elements are present, What is VNTR among the repetitive elements, and why VNTR is used as a biomarker in forensic science to distinguish among suspects at the crime scene? [3.5 marks] CO I

Q2. What is pyrosequencing? Describe the types of Pyrosequencing and different applications of the sequencing technology in functional genomics? [3.5 marks] CO II

Q3. What is mapping in the context of functional genomics? Define physical and genetic mapping [3.5 marks] CO II

Q4. Describe the role p53 gene in different cancers such as lung cancer, and cervical cancer to their association with cancer diseases. How it helps in the prognosis and diagnosis of the diseases [3.5 marks] CO II

Q5 In a DNA sample of 4kb size, digested by BamHI, leads to 3 and 1 kb DNA fragments. If the DNA sample may contain mutation at a restriction of BamHI, what are the possible banding for homozygous wild type, heterozygous and homozygous mutant DNA samples? [3.5 marks] CO II

Q6. How to identify and quantify the transcripts from the lung cancer cells in comparison to the normal cells using DNA microarray technology? [3.5 marks] CO II

Q7. Gene density varies significantly in the genome starting from prokaryotic to eukaryotic system. The approximate no. of genes in *S. cerevisiae* eukaryotic genome is around 6000; calculate the gene density? [4 marks] CO I