JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST-2 EXAMINATION-2025

B. Tech.-V Semester (BT)

COURSE CODE (CREDITS): 18B1WBT532 (3) MAX. MARKS: 25

COURSE NAME: COMPARATIVE AND FUNCTIONAL 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	Explain the principle and steps involved in Pyrosequencing. How does it differ from traditional Sanger sequencing, and what are its advantages and limitations?	CO II	3.5
Q2	Schematically present a gene structure of a eukaryotic gene with features/signals, including splicing sites?	CO I	3.5
Q3	Describe the pharmacodynamics of gefitinib. Explain its mechanism of action and how it exerts its therapeutic effects in cancer treatment	CO II	3.5
Q4	Explain the pharmacokinetic properties of a drug. Discuss how these pharmacokinetic properties influence its therapeutic use and the management of dosing in patients	CO II	3.5
Q5	Give the estimated gene number and the genome sizes of Homo sapiens, calculate and discuss the importance of gene density and evaluate how it reflects their biological complexity	CO I	3.5
Q6	A genetic screening was done on 10,000 patients. A change in a nitrogenous base (i.e., a single nucleotide change) was observed in 10 patients at a specific location in the TP53 gene. Is this change a single-nucleotide polymorphism (SNP) or a point mutation? Explain.	CO III	3.5
Q7	Highlight the role of SNPs in tumour suppressor genes, TP53 gene, which encodes the p53 protein, in the development and progression of various types of cancer, covering different geographical locations?	CO III	4