

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST-2 EXAMINATION-2024

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	DNA sequencing is an emerging area in biotechnology such as genomic DNA or transcriptome, Illumina sequencing has shown great promise. Evaluate the methodology and working of Illumina and point out major differences with Sanger's sequencing technology.	CO I & II	4
Q2	Draw a complete gene structure of a eukaryotic gene, with splicing sites?	CO I	3
Q3	Analyze the role of DNA microarray in studying the whole genome expression profile of drug-resistant <i>E. coli</i> cells versus drug-sensitive.	CO II	3
Q4	Evaluate the response of a drug that depends on the genotype of a gene, give examples of drugs and diseases where genotype is important to select drugs or determine the appropriate dose of the drug.	CO II	4
Q5	Analyze the genome size of humans and <i>S. cerevisiae</i> . Apply the concept of gene density to the complexity of Humans vs <i>S. cerevisiae</i> .	CO I	2
Q6	Among 9999 patients, the screening <i>Egfr</i> gene was carried out, and a change in a nitrogenous base at the specific location of the gene was observed in 199 patients. Explain the change in <i>Egfr</i> is SNP or point mutation with justification.	CO II	3
Q7	Describe the normalization equation applied in DNA Microarray technology to remove the systematic and technical bias in the data.	CO II	3
Q8	Create an experimental design for the role of tumour suppressor gene in different types of cancer.	CO II	3