

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST-2 EXAMINATIONS-2023

M. Tech. I Semester (BT)

COURSE CODE (CREDITS): 13M11BT114 (3)

MAX. MARKS: 25

COURSE NAME: HIGH THROUGHPUT TECHNOLOGIES

COURSE INSTRUCTOR: DR. JATA SHANKAR

MAX. TIME: 1 Hour 30 minutes

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*Note: (a) All questions are compulsory.*

*(b) Marks are indicated against each question in square brackets.*

*(c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems*

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Q1. DNA binding proteins are regulatory in nature and regulate the gene expression. Describe the ChIP-Seq technology and mechanism to identify the nucleotide sequence that acts as binding sites? {3 marks] COI

Q2. What are the main features of DNA microarray technology that enables its application in genome wide expression profiling? [3 marks] COI

Q3. Give the working flow of **DNA microarray technology** or **Illumina sequencing technology**? How do you proceed to identify the upregulated or downregulated genes in cancer treated cells comparing to the cancer relapse cells [3 marks] CO I & II

Q4. Describe the screening of repurpose drug using high through put approach for drug discovery that have gone through in case study? [3 marks] COII

Q5. What do mean by high throughput material preparation in RNA Seq or applicable in transcriptome analysis [3 marks] COII

Q6. Notes on the following (2.5 marks each) CO I & II

a. cDNA vs oligonucleotide based DNA microarray

b. Function based metagenomics

c. Application of pyrosequencing

d. ML and AI in Culturomics