JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST-3 EXAMINATIONS-2022

M. Tech-II Semester (BT)

COURSE CODE (CREDITS): 14M11BT213 (3) MAX. MARKS: 35

COURSE NAME: FUNCTIONAL GENOMICS

COURSE INSTRUCTORS: DR JATA SHANKAR

MAX. TIME: 2 Hours

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

Q1. How genome sequencing of model organism is useful to study the functional genomics? (3 marks)

Q2. If you want study TP53 gene for human cancer biology, which model organism is suitable? Name ortholog gene in model organism and how it will relevant in cancer studies (3 marks)

Q3. What are the characteristics of DNA Microarray that enabled the technology to be widely accepted for whole genome expression analysis? (3 marks)

Q4. What is interference RNA technology? Why is relevant in functional genomics studies? What is difference in micro/silencing RNA? (3 marks)

Q5. Metagenomcs is an emerging field, explain, what kind of data you anticipate during gut microbiome analysis and how it helps to improve human health? (3 marks)

Q6. Markers are crucial in the diagnosis and assessment of drug choice, what are different kinds of DNA markers, and also explain protein biomarker suitable cancer detection? ? (5 marks)

Q7. If you have provided with genomic facilities and *E. coli* oligo chip, how to proceed to identify the differential expressed gene from the drug-treated *E. coli* and untreated *E. coli* cells? (5 marks)

Q8. Describe the pharmacokinetics and pharmacodynamics factors? How drug (gefinitib) response depends upon genotype, explain with suitable example and explain the role SNP? (5 marks)

Q9. Describe the methodology of Sanger's and single cell RNA sequencing? Highlight the significances and its uses? (5 marks)