

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATIONS-2022

B. Tech V-Semester (BT)

COURSE CODE (CREDITS): 18B1WBT532 (3)

MAX. MARKS: 15

COURSE NAME: COMPARATIVE AND FUNCTIONAL GENOMICS

COURSE INSTRUCTOR: DR. JATA SHANKAR

MAX. TIME: 1 Hour

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

- Q1. What is the genome size of *E. coli* and how many genes encoding proteins are estimated to be present in the *E. coli*? [2 marks] CO I
- Q2. The cancerous tissue contains heterogeneous cells with respect to mutations, unique pathology or unique drug response; describe a model organism with their genomic information applicable to study the cancer disease? [2 marks] CO I
- Q3. Draw a complete gene structure of a eukaryotic gene, with splicing sites? [2 marks]
- Q4. Pyrosequencing technology belongs to the next generation sequencing, describe the technology? And how it helps to identify gene sequence and also provide the critical enzyme with sources involved in the sequencing? [2 marks] CO I & II
- Q5. The approximate no. of genes in *S. cerevisiae* genome is around 6000 and genome size 12Mb; calculate the gene density and define open reading frame? [2 marks] CO I
- Q6. Explain the following (5 marks) CO I & II
- Central Dogma
 - Sequence Alignment
 - Sanger sequence methodology?
 - ESTs
 - Genetic and physical mapping