

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATIONS-2023

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

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

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Q1. Explain the following [3 marks (1.5 marks each) CO I & II

a. with a insight into the term 'Central dogma'

b. in the context to genomics 'Genetic and physical mapping'

Q2. Elucidate the distinctions between prokaryotic and eukaryotic genes, highlighting the fundamental differences in their organization and characteristics? [2 marks] CO I

Q3. Provide a description of Sanger's sequencing technology, detailing its methodology and significance in DNA sequencing? [2 marks] CO I & II

Q4. Explain the Pyrosequencing technology, which is a part of next-generation sequencing? How does this technology facilitate the identification of gene sequences? Additionally, could you elaborate on the pivotal enzyme involved in this sequencing method, along with its sources?  
[3 marks] CO II

Q5. The approximate no. of genes in *E. coli* genome is around..... ? And genome size.....?  
Calculate the gene density? [3 marks] CO I

Q6. What is the gene count and size of the mitochondrial genome in humans? Additionally, could you elaborate the reason on the contrast in mitochondrial numbers between normal cells and cancerous cells [2 marks] CO I