JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST-1 EXAMINATIONS-2023

M. Tech. I Semester (BT)

COURSE CODE (CREDITS): 13M11BT114 (3)   MAX. MARKS: 15

COURSE NAME: HIGH THROUGHPUT TECHNOLOGIES

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 estimated genome size of Human, and how many protein-encoding genes are believed to be present in its genome? 2 marks] COI

Q2. Describe a detailed explanation of the mechanism and methodology underlying Sanger's DNA sequencing technology?" [2 marks] COI

Q3. "How does Illumina sequencing technology fit into the realm of next-generation sequencing, and how does it impact gene identification and gene expression analysis in high-throughput studies? [3 marks] CO I

Q4. What are the significant advantages of high-throughput sequencing technologies like Illumina compared to Sanger sequencing? [3 marks] COI

Q5. The PHRED score is a logarithmic measure of the quality of a base call in DNA sequencing. It is defined as PHRED score$=-10 \cdot \log10(\text{error probability})$

If a given nucleotide sequence, the PHRED score is 40, calculate the error rate. [3 marks] COII

Q6. Explain the concept of sequence-based function metagenomics. Provide a suitable example to illustrate this concept. Additionally, elaborate on how microbes contribute to maintaining human health?" 2 marks] COI