

COURSE CODE (CREDITS): 18B1WBT532 (3)

MAX. MARKS: 25

COURSE NAME: COMPARATIVE AND FUNCTIONAL GENOMICS

COURSE INSTRUCTOR: DR. JATA SHANKAR

MAX. TIME: 1 Hour 30 minutes

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

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Q1. What is the genome size of human and how many genes encoding proteins are estimated to be present in the human genome? [3 marks] CO I

Q2. The cancerous tissue contains heterogeneous cells with respect to mutations, unique pathology or unique drug response; describe two model organism with their genetic information applicable to study the cancer disease and why? [3 marks] CO I

Q3. Draw a complete gene structure of a eukaryotic gene, with splicing sites and methods for gene prediction [3 marks] CO I

Q4. Illumina sequencing technology is a latest sequencing technology, explain it works and how it helps to identify gene expression of the entire genome [3 marks] CO I & II

Q5. Explain with differences between types of pyrosequencing and how do calculate the phred score to assess the quality sequence in Sanger's sequencing? [3 marks] CO I

Q6. Explain the following (10 marks) CO II

a. Metagenomics

b. Transcriptome

c. Salient features DNA microarray

d. Difference between of cDNA and oligo-nucleotide based DNA microarray

e. Coding and non-coding sequence and difference between exon and intron?