B.Tech VIth Semester (BT/BI)

Course Code: 10B11BT611

Course Name: Comparative and Functional Genomics

Course Credits: 04

MAX. MARKS: 35

MAX. TIME: 2 Hrs

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means. Marks are indicated in square brackets against each question

Q1. What is the estimated gene numbers and genome size of *E. coli*, *S. cerevisiae*, and *human* genome, and what relation among these species you can observed looking at these genomic data? CO I (5 marks)

Q2. Write short notes on; CO I, COII & CO III, 12 marks (each 1.5)

a. Normalization in DNA microarray data

b. mi RNA

c. Transcriptome

d. Splicing

e. Alternate Splicing

f. Threshold cycle (C_T Value)

g. Isoforms

h. p53 (tumor suppressor gene)

Q3. What are the characteristics DNA microarrays? Difference between oligonucleotide based DNA array and cDNA based DNA array? CO II, marks 3

Q4. What is biomarker; discuss the characteristics of a biomarker and what do mean by quantitative and qualitative assessment of the pathological condition using biomarker? Give example of a biomarker that has been successfully used for the past 30 years? CO IV, 5 marks

Q5. Define the term pharmocogenomics? How drugs e.g., Gefinitib works for few specific genotype in case of cancer patients and not to the others. Explain the mechanism how the patients are responding well to the drugs? COIV 5 marks

Q6. What is RNAi, how small sized RNA regulated expression of gene products, write the mechanism how it works? COIII, 5 Marks