Registration No : | | | | | | | | | | |

Total Number of Pages : 02 **B.Tech**
PBT5D001

5th Semester Regular Examination 2018-19
GENOMICS, PROTEOMICS AND META-BOLOMICS
BRANCH : BIOTECH
Time : 3 Hours
Max Marks : 100
Q.CODE : E542

Answer Question No.1 (Part-1) which is compulsory, any EIGHT from Part-II and any TWO from Part-III.
The figures in the right hand margin indicate marks.

Part- I

Q1 **Short Answer Type Questions (Answer All-10)** **(2 x 10)**

a) What is Pharmacogenetics and Pharmacogenomics?
b) What are the factors affecting ionization of an analyte?
c) What is molecular docking?
d) What is reverse genetics? Write its utility.
e) Name a database related to metabolomics and write its significance.
f) What are the social implications of sequencing human genome?
g) Write the principles of pyrosequencing.
h) How many SNPs are exist in human protein coding genes approximately and about how many of these could affect protein structure?
i) What do you mean by metagenomics?
j) What is a single orphan gene? What is an orphan family?

Part- II

Q2 **Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve)** **(6 x 8)**

a) What is peptide mass finger-printing? Describe briefly.
b) Describe Clone Contig assembly by chromosome walking.
c) Briefly delineate the nomenclature used to describe the peptide ion fragmentation for protein analysis using Mass Spectrometry.
d) What are the potential applications of metabolomics in biomedical research?
e) Distinguish between nucleic acid programmable protein array (NAPPA) and DNA array to protein array (DAPA)
f) What is genome mapping? Discuss the types of genome mapping techniques.
g) What is Gene Ontology (GO)? Why GO is important in genome biology?
h) What is functional genomics? What tools are used in this technology?
i) What is posttranslational modification? How can you predict the disulfide bridge, signal peptide and subcellular localization of a protein by using Bioinformatics?
j) Write down the principle and applications of NMR spectroscopy.
k) What is Homology modelling? How can you build a 3D structure of a protein by using this technique?
l) Discuss the various structure based drug design approaches.

Part-III

Long Answer Type Questions (Answer Any Two out of Four)

Q3 Describe how proteomic analysis is accomplished using the MALDI-TOF Mass spectrometry. **(16)**

Q4 What do you mean by High-throughput sequencing technology? Discuss the types, principles and advantages of Next generation sequencing technology. **(16)**

Q5 How can you annotate the genes encoding “hypothetical proteins”? Discuss briefly. **(16)**

Q6 How protein-protein interactions (ppi) help to understand the molecular interactions in living systems? Briefly describe different methods to predict protein network. **(16)**