B.Tech.

(SEM. VIII) THEORY EXAMINATION 2013-14

GENOMICS AND PROTEOMICS

Time : 3 Hours   *Total Marks : 100*

Note :– Attempt **all** the questions.

1. Attempt any **two** parts of the following :   (10×2=20)

    (a) Explain the structure of a eukaryotic gene with labelled diagram.

    (b) Define genome annotation and discuss the annotation tools.

    (c) Write short notes on :

        (i)   Sequence alignment

        (ii) Prokaryotic gene annotation.

2. Attempt any **two** parts of the following :   (10×2=20)

    (a) Illustrate the shotgun method of DNA sequencing and their sequence assembly.

    (b) Give an overview of genomic evolution of pathogen with HIV virus as an example.

    (c) Write short notes on :

        (i)   BAC library and its importance

        (ii) Construction of genetic map.

3. Attempt any **two** parts of the following : **(10×2=20)**

    (a) What is microarray ? Describe the basic principle and design of oligonucleotide array.

    (b) What is the need of dimensionality reduction in microarray data analysis ? Discuss the principal component analysis method with suitable example.

    (c) Write short notes on :

    (i) Genotyping

    (ii) SNP detection tools.

4. Attempt any **two** parts of the following : **(10×2=20)**

    (a) Define proteomics. Outline the 2D gel electrophoresis method for protein identification and characterization.

    (b) Could you predict the protein function from its amino acids ? Explain the method in detail.

    (c) What is yeast two hybrid system ? How does it help in studying protein-protein interaction ?

5. Write notes on any **two** of the following : **(10×2=20)**

    (a) Pharmacogenetics

    (b) Proteomics and drug discovery

    (c) Metagenomics.