

M.Sc. Part-I Semester-II (CBCS Scheme) Examination
BIOINFORMATICS
(Techniques in Bioinformatics)
Paper—VIII

Time : Three Hours] [Maximum Marks : 80

Note :- (1) **ALL** questions are compulsory and carry equal marks.

(2) Draw suitable diagram wherever necessary.

1. Describe :

- (a) Primary nucleotide sequence database with an example. 4
- (b) Need of derived databases. 4
- (c) CATH as a structure database. 4
- (d) INTERPRO 4

OR

- (p) Primary protein sequence data with an example. 4
- (q) PRINTS as a derived database. 4
- (r) Genome databases 4
- (s) STS as a repository for genomic sequences. 4

2. Explain :

- (a) Any one algorithm used for searching sequence pattern. 4
- (b) Scan prosite 4
- (c) Role of Bioinformatics in identification of disease genes. 4
- (d) SNP database. 4

OR

- (p) Any one algorithm used for generation of sequence profiles. 4
- (q) PHI-BLAST 4
- (r) HMMer 4
- (s) Role of Bioinformatics in gene expression profiling. 4

3. Describe :

- (a) CPG Islands 4
- (b) Gibbs sampling technique 4
- (c) Gene prediction in Prokaryotes 4
- (d) Spliced Alignment. 4

OR

- (p) Reverse gene finding 4
- (q) Gene prediction in Eukaryotes 4
- (r) DNA Linguistics 4
- (s) HMM in gene prediction. 4

- 4. What is genome rearrangement ? Describe in detail the common rearrangement events in unichromosomal and multichromosomal genomes. 16

OR

What is Permutation ? Describe in detail the role of signed, unsigned and transformation of permutation in genome rearrangement. 16

- 5. Define DNA Microarray. Explain different databases and tools used in DNA microarray analysis. 16

OR

Describe in detail normalization of microarray data. Explain their role in detecting differential gene expression and correlation of gene expression data to biological process. 16