Paper – IV: Bioinformatics

Unit-I

Introduction of computers: Basic components and their functions, hardware and software, Input-Output devices.

Basic concepts about data and information, Representation of data in computers in binary, bits and bytes.

Unit-II

Computer words coding (ASCII and EBCDIC), Numeric data.

Introduction to Programming languages, C^{++} Perl.

Conceptual understanding of assemblers, Compilers, Operating System.

Unit-III

Information Retrieval: LAN, WAN, Introduction to Internet, WWW, NICNET, ERNET, VSNL, ISDN, E-mail, Publication on worldwide web, on-line publishing ventures eg. Biomed, online international database access.

Unit-IV

Biological Databases: Primary Sequence databases (Protein and DNA databases), Secondary databases, Composite databases.

Sequence Alignment and Databases searching: Evolutionary basis of sequence alignment. Optimal Alignment methods, Substitution Scores and Gap penalties.

Unit-V

Statistical significance of alignment, Databases similarity searching: FASTA, BLAST.

Pairwise database searching: EMBOSS, Multiple Sequence alignment: CLUSTAL W. BLIS Network in India.