Paper Code:BCA 310 | **L** | **T** | **C**
Paper ID:20310 | **3** | **1** | **4**
Paper: BioInformatics
Pre-requisites:None

Aim: Aims at providing an elementary knowledge of Bioinformatics, Databases and Algorithms.It aims at introduction of PERL as PERL is one of the important programming languages for Bioinformatics

Objectives

1. To understand Scope of Bioinformatics
2. To understand Types of Databases and their use.
3. To understand Notation and different types of Algorithms
4.To understand the basic commands in Unix and PERL.

INSTRUCTIONS TO PAPER SETTERS: **Maximum Marks: 75**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 12.5 marks

UNIT-I

HISTORY, SCOPE AND IMPORTANCE: Important contributions - sequencing development - aims and tasks of Bioinformatics - applications of Bioinformatics - challenges and opportunities - Computers and programs – internet - world wide web – browsers - EMB net – NCBI. **[No. of Hrs: 11]**

UNIT-II

DATABASES - TOOLS AND THEIR USES: Importance of databases - nucleic acid sequence databases - protein sequence data bases - structure databases - bibliographic databases and virtual library - specialized analysis packages **[No. of Hrs: 11]**

UNIT-III

INTRODUCTION TO BIOINFORMATICS ALGORITHMS: Algorithms and Complexity-Biological algorithms versus computer algorithms – The change problem –Correct versus Incorrect Algorithms – Recursive Algorithms – Iterative versus Recursive Algorithms – Big-O Notations – Algorithm Design Techniques. **[No. of Hrs: 11]**

UNIT-IV

UNIX COMMANDS: Advanced Unix commands-Introduction-ls-cat-more-, Advanced Unix commands-mv-rm-rmdir-uniq-sort- , Advanced Unix commands-grep.

PERL: Introduction to Perl-scalars, Arrays-Using standard Perl modules-Perl regular expressions I.

BIOPERL: Installation and usage of bioperl modules **[No. of Hrs: 11]**

TEXTBOOKS

[T1] T K Attwood, D J parry-Smith, Introduction to Bioinformatics, Pearson Education, 1st Edition, 11th Reprint 2005.
[T2] S. Ignacimuthu, S.J., Basic Bioinformatics, Narosa Publishing House, 1995.
[T3] Neil C. Jones and Pavel A. Pevzner, An Introduction to Bioinformatics Algorithms, MIT Press, First Indian Reprint 2005.
[T4] Harshawardhan P BAL, Perl Programming for Bioinformatics, Tata McGraw Hill, 2003.