

## **DBMS IN BIOLOGY**

### **UNIT I**

Purpose of database systems – View of data: Data abstraction –Instances and Schemas – Data independence.

### **UNIT II**

#### **Data models:**

ER Model: Entity and entity sets – Relations and relationship sets – ER diagrams – Reducing ER diagrams to tables - Network data model: Basic concepts.

Hierarchical data model: Basic concepts.

### **UNIT III**

Relational database design: Normalization (first three forms).

PL / SQL: Approach and advantages – PL/SQL blocks – variables – Manipulating data – Procedural constructs – Exception handling – Program units in Oracle forms –PL/SQL editor.

### **UNIT IV**

Databases in Biology – Abstracting Databases – Biological Abstracts, NCBI-PUBMED,

### **UNIT V**

Databases in Molecular Biology - Nucleic acid sequence databases: NCBI-GenBank, EMBL, DDBJ – Protein sequence databases: SWISSPROT, NBRF-PIR – Structure Databases – PDB, NDB and Cambridge Crystallographic Database

### **Reference Books**

1. Ramez Elmasin- Shamkant B. Navathe, *Fundamentals of database systems*, third edition, 2001.
2. Alexis Leon & Mathew Leon, *Database Management Systems*.
3. Silberschatz, Korth and Sudarshan, *Database System Concepts*, McGraw Hill International edition, 2002.
4. A. Baxevanis and B.F. Ouellette, *Bioinformatics: A practical Guide to the Analysis of Genes and Proteins*, Wiley-Interscience, Hoboken, NJ (1998).
5. T.K. Attwood and D.J. Parry-Smith, *Introduction to Bioinformatics*, Pearson Education Ltd., New Delhi, 2004.
6. Sillince, JA and Sillince Springer verlag, *Molecular database for protein sequence and structure studies*, 1991.