SECOND YEAR B.SC. COMPUTER SCIENCE

Paper-I : <u>Introduction to Database Management System</u>

UNIT - I

Introduction : Database system applications, What is database System, database systems versus file systems, views of data, database languages, database users , database system structure, Data Dictionary. Advantages of DBMS.

UNIT - II

Database Architecture and Modelling: DBMS Architecture(Internal ,Conceptual and External),Data Independence ,Database Models: Hierarchical ,Network and Relational , Role of DBA. Data modeling using the Entity Relationship Model**:** ER model concepts, notation for ER diagram, mapping constraints, keys, concepts of super key, candidate key, primary key, unique key, generalization, aggregation, reduction of an ER diagram to tables.

UNIT - III

Relational DMBS : Terminology , views , Structure of relational databases, CODD'S Rules Relational algebra : Operators and Operands in relational algebra, Projection, Selection , Set union, Set difference, Set intersection , Cartesian product, Join , Natural join

UNIT - IV

Introduction to SQL : Characteristics of SQL, Advantages of SQL, Types of SQL commands, SQL operators and their precedence. Tables, Views and Indexes : Create, Alter , Insert , Drop Operations. Integrity Constraints.

Queries and sub-queries. Aggregate functions : Sum , Avg , Max , Min , Count.

SQL Functions : Arithmetic Functions , Character Functions , Date Functions.

UNIT - V

Backup and Recovery : Database backups, Hardware protection and redundancy , Importance of Backups. Database Recovery : Databse Recovery , Data Storage , Causes of Failures , Recovery Concepts and terminology..

Database Security and Integrity : Types of Integrity constraints , Restrictions on Integrity Constraints , Data Security Risks, Dimensions of Security. Protecting data within the database : Database audit , Authenticating users to the database, Statistical database , Data Encryption.

Recommended Books :

1. **Introduction to Database Systems :- Bipin Desai**
2. **Fundamental of database system :- Elmasiri and Navathe**