Database Management System (DBMS)

Course Code: BCA 102T

UNIT-I

Introduction: An overview of database management system, Characteristics of database approach, DBMS architecture, client/server, data Models, Introduction to Distributed Data processing, schema and instances, data independence, Data Modelling using Entity Relationship Model: Basic introduction about the terminologies like Entity, Entity types, entity set, notation for ER diagram, attributes and keys, Types of attributes (composite, derived and multivalued attributes) and keys (Super Key, candidate key, primary key), relationships, relation types, weak entities, enhanced E-R, specialization and generalization.

UNIT – II

Introduction to SQL: Overview, Characteristics of SQL. Advantage of SQL, SQL data types and literals. Types of SQL commands: DDL, DML, DCL. Basic SQL Queries. Logical operators: BETWEEN, IN, AND, OR and NOT Null Values: Disallowing Null Values, Comparisons Using Null Values Integrity constraints: Primary Key, Not NULL, Unique, Check, Referential key Introduction to Nested Queries, Correlated Nested Queries, Set-Comparison Operators, Aggregate Operators: The GROUP BY and HAVING Clauses, Joins: Inner joins, Outer Joins, Left outer, Right outer, full outer joins. Overview of other SQL Objects: Views, Sequences, Indexes, Triggers and stored procedure.

UNIT – III

Relational Data Models: Relational model terminology domains, Attributes, Tuples, Relations, characteristics of relations, relational constraints domain constraints, key constraints and constraints on null, relational DB schema. Codd's Rules Relational algebra: Basic operations selection and projection, Set Theoretic operations: Union, Intersection, set difference and division Join operations: Inner, Outer, Left outer, Right outer, and full outer join ER to relational mapping: Steps to map ER diagram to relational schema Data Normalization: Functional dependencies, Armstrong's inference rule, & Normalization (Up to BCNF)

UNIT – IV

Transaction Processing: Definition of Transaction, Desirable ACID properties
.Database recovery and Database Security: System failure, Backup & recovery Techniques, Authentication, Authorization.

Overview of Query by Language, NoSqldatabses