DBMS-2-01T: Data Base Management System (DBMS)

Total Marks: 100
External Marks: 70
Internal Marks: 30
Credits: 6
Pass Percentage: 40%

Course: Data Base Management System (DBMS)	
Course Code: DBMS-2-01T	
Course Outcomes (COs)	
After the completion of this course, the students will be able to:	
CO1	Understand the fundamental elements of database management system.
CO2	Understands the three level architecture of DBMS and mapping between these levels.
CO3	Familiar with the hierarchical model, network model, entity relationship model and relational model.
CO4	Acquire knowledge of normalization technique that reduces data redundancy and eliminates undesirable characteristics like Insertion, Update and Deletion Anomalies.
CO5	Apply SQL to solve problems

Detailed Contents:

Module No.	Module Name	Module Contents
Module 1	**Introduction of DBMS**	Database Approach, Characteristics of a Database Approach, Database System Environment. Roles in Database Environment: Database Administrators, Database Designers, End Users, Application Developers. Database Management Systems: Definition, Characteristics, Advantages of Using DBMS Approach, Classification of DBMSs. Three Level Architecture of DBMS: Database Schema and Database Instance, Mapping Between Different Views, Data Independence–Physical and Logical Data Independence, Difference between logical data independence and physical data independence, Components of a DBMS, Data Dictionary, DBMS Languages.
Module II	**Data Models**	Classification of Data Model, Hierarchical Model, Network Model, Entity Relationship Model, Database Conceptual Modeling by E-R model: Concepts, Entities and Entity Sets, Attributes, Mapping Constraints, E-R Diagram, Weak Entity Sets, Strong Entity Sets, Comparison between Data Models. Relational Data Model: Concepts and

		Terminology. Constraints: Integrity Constraints, Entity and Referential Integrity constraints, Keys,
Module III	**Relational Algebra & Relational Calculus**	**Relational Algebra:** Basic Operators, Additional Operators. **Relational Calculus:** Tuple Relational Calculus and Domain Relational Calculus, Difference between relational algebra and relational calculus.
Module IV	**Normalization**	Functional Dependency, Full Functional Dependency, Partial Dependency, Transitive Dependency, Normal Forms– 1NF, 2NF, 3NF, BCNF, Multi-valued Dependency, Join Dependency and Higher Normal Forms-4NF, 5NF.
Module V	**Transaction Management & Concurrency Control**	Transaction Management and Concurrency Control: ACID Properties. Database Protection: Security Issues, Discretionary Access Control-Granting and Revoking Privileges. Database Concurrency: Problems of Concurrent Databases, Serializability and Recoverability, Concurrency Control Methods- Two Phase Locking, Time Stamping. Deadlock, Database security and integrity, Different Methods of Database Security, Database Recovery: Recovery Concepts, Recovery Techniques-Deferred Update, Immediate Update, Shadow Paging.
Module VI	**SQL**	Introduction to SQL*PLUS, Data types, Parts of SQL: Data Definition Language, Data Manipulation Language, Data Control Language, and Transaction Control Language. SQL Operators, SQL Functions, Joins, Roll up operation, Cube operation, Nested query, Subquery, View, Disadvantages of SQL.

Books

1. Elmasry Navathe, "Fundamentals of Database System", Pearson Education.
2. James Groff, Paul Weinberg, Andy Oppel, "Oracle SQL Complete Reference", Tata McGraw-Hill.
3. T.Connolly, C Begg,"Database Systems", Pearson Education.
4. Jeffrey D. Ullman, "Principles of Database Systems", Galgotia Publications.
5. Henry F. Korth, A. Silberschhatz, "Database Concepts", Tata McGraw Hill.
6. C. J. Date, "An Introduction to Database Systems", Pearson Education