MCA – 15: Database Management System

Unit: 1   **[25%]**
Basic concepts of Database Systems
Database approach - characteristics & implications. Database Architecture – data models, data independence, classification of DBMS, data modeling, mapping ,DBA, client/server architecture.
Relational and other models
Relational model concepts and constraints, relational algebra, queries in relational algebra.

Unit: 2   **[25%]**
Database Design using RDBMS
Functional dependency & normalization. Schema design and normal forms. Database design process and tools.
Structured query language
Data definition, update, queries, views, etc. Embedded SQL. Relational calculus, UEL and QBE Examples of RDBMS - Oracle, D2K, Sybase, etc. Case study of one such RDBMS. Other models - Network and Hierarchical, their structures and constraints. Examples of such database systems.

Unit: 3   **[25%]**
Implementation techniques with data protections
System catalogs, query processing and optimization, transaction processing concepts, concurrency control, recovery, database security and authorization.

Unit: 4   **[25%]**
PL/SQL
* Variable declaration
* Control Structure
    1. Condition structure.
    2. Iterative structure.
* Cursor
    1. Implicit.
    2. Explicit.
* Exceptions.
    1. Predefine exceptions.
    2. Users define exceptions.
    3. Handling Raised exceptions.

Text Books:
1. Database Management System: Concept, Design, Architecture and SQL
    a. by Dr. A.C. Shah, Dr. A.R. Patel, MacMillan Publisher India Ltd.,
2. Introduction to Database Systems, 4th Edition, C. J. Date, Narose Publishing.

Reference Books:
1. Database Management and Design, Gary W. Hansen and James V. Hansen, Prentice-Hall India, 1999.
2. Fundamentals of Database Systems, 2nd Edition, Elmasri and Navathe, Benjamin/Cummings, 1994.
3. Database System Concepts, A. Silberschatz, Henry Korth and S. Sudarshan, McGraw-Hill, 1997.

Question Paper Scheme:
Q.1 - Objective Type Unit I & II   (11) Marks
Q.2 - Unit-I OR Q.2 Unit-I   (12) Marks
Q.3 - Unit-II OR Q.3 Unit-II   (12) Marks
Q.4 - Objective Type Unit III & IV   (11) Marks
Q.5 - Unit-III OR Q.5 Unit-III   (12) Marks
Q.6 - Unit-IV OR Q.6 Unit-IV   (12) Marks