

## MScIT-07

### Fundamentals of Database Management Systems

#### **UNIT 1 : File Structure and Organization**

Data and information, Concept of field, key field; Records and its types, fixed length records and variable length records; Files, operation on files, Primary file organization

#### **UNIT 2 : Database Management System**

Definition of DBMS, file processing system Vs DBMS, Advantages and Disadvantages of DBMS, Users of DBMS : Database Designers, Application programmer, Sophisticated Users, End Users, Capabilities of good DBMS, Overall System structure

#### **UNIT 3 : Data Models**

Data Models : Object Based Logical Model, Record Base Logical Model, Relational Model, Network Model, Hierarchical Model, Entity Relationship Model : Entity Set, Attribute, Relationship Set, Entity Relationship Diagram (ERD), Extended features of ERD

#### **UNIT 4 : Relational Databases**

Relational data model concept, Terms :Relation, Tuple, Attribute, Cardinality, Degree, Domain; Keys : Super Key, Candidate Key, Primary Key, Foreign Key; Relational Algebra – Operations: Select, Project, Union, Difference, Intersection, Cartesian Product, Natural join

#### **UNIT 5 : SQL (Part I)**

Introduction of SQL, characteristics of SQL, Basic Structure, DDL Commands, DML, DQL, SELECT Statement, WHERE Clause, Useful Relational Operators, Aggregate Functions, SUM Function, AVG Function

#### **UNIT 6 : SQL (Part II)**

Compound Conditions and Logical Operators, AND Operator, OR Operator, Combining AND and OR Operators, IN Operator, BETWEEN Operator, NOT Operator, Order of Precedence for Logical Operators, LIKE Operator, Concatenation Operator, Alias Column

Names, ORDER BY Clause, Handling NULL Values, DISTINCT  
Clause

**UNIT 7 : Relational Database Design**

Introduction to Normalization, Anomalies of unnormalized database, Normal Form :  
1NF, 2NF, 3 NF