Data Base Management System(DBMS)-Sem 4

UNIT 1: Introduction to DBMS

*What is a Database? Explain the features of DBMS.

*Difference between File System and DBMS.

*Explain Three-schema architecture in DBMS.

*What is Data Independence? Distinguish between Logical and Physical independence.

*Roles and responsibilities of a Database Administrator (DBA).

UNIT 2: Data Models & ER Model

*Define Entity, Attribute, and Relationship with examples.

*Draw and explain an ER Diagram for a library or hospital system.

*What are the types of Attributes in DBMS? (Simple, Composite, Derived, etc.)

*Define and explain Generalization, Specialization, and Aggregation.

*How do you convert an ER diagram to a relational schema?

UNIT 3: Relational Model & SQL

*What is the Relational Data Model? Explain its components.

*Types of Keys in DBMS: Primary, Candidate, Foreign, Super, Composite

*Write SQL queries for:

Table creation using constraints

Insert, update, delete records

Select with conditions (WHERE, LIKE, BETWEEN)

*Explain different types of JOINS in SQL with examples.

*Difference between TRUNCATE, DELETE, and DROP commands.

UNIT 4: Normalization

*What is Normalization? Why is it needed?

*Explain 1NF, 2NF, 3NF with examples.

*Define Functional Dependency with example.

*Identify candidate keys and normalize a table up to 3NF.

*Discuss the problems caused by redundancy and anomalies in unnormalized tables.

UNIT 5: Transactions and Concurrency

*Define Transaction. Explain ACID Properties with examples.

*What is Concurrency Control? Why is it important?

*Define Deadlock. How can it be prevented in DBMS?

*Explain Lock-based protocols and Timestamp-based protocols.

*What is Database Recovery? Explain types of failures and recovery methods.