DBMS – Important Questions (Units 1 to 3)

UNIT 1: Introduction to DBMS

1. What is DBMS? Explain its advantages and disadvantages.
2. Difference between DBMS and File System.
3. Explain the three levels of database architecture.
4. What is Data, Information, and Metadata? Give examples.
5. Define Data Models. Explain Hierarchical, Network and Relational models.
6. What are the main components of DBMS?
7. Who is DBA (Database Administrator)? What are his responsibilities?
8. Explain Data Independence and Data Redundancy.

UNIT 2: Database Keys & Normalization

1. What are Keys in DBMS? Explain types of keys: Primary, Foreign, Candidate, Super Key.
2. Define Functional Dependency with example.
3. What is Normalization? Why is it needed?
4. Explain 1NF, 2NF, and 3NF with examples.
5. What is Denormalization?
6. What are Anomalies in DBMS (Insertion, Deletion, Update)?
7. Short notes: Relation and Attributes, Tuple and Domain.

UNIT 3: SQL (Structured Query Language)

1. What is SQL? Explain DDL, DML, DCL, TCL commands with examples.
2. Write SQL commands to: Create table, Insert, Update, Delete records.
3. Explain the SELECT statement with WHERE, ORDER BY, GROUP BY, HAVING clauses.
4. Write SQL queries: Display all student records, Display students having marks > 70, Find average marks, Display name and roll number sorted ascending.
5. Explain Aggregate Functions (SUM, AVG, COUNT, MAX, MIN).
6. What is JOIN? Explain Inner, Left, Right Join with examples.
7. Explain Constraints (NOT NULL, UNIQUE, PRIMARY KEY, FOREIGN KEY).

Quick Revision Notes:

- DBMS = Software that stores and manages data efficiently.
- Data Models = Describe how data is structured (Hierarchical, Network, Relational).
- Normalization = Removes redundancy and maintains data integrity.
- SQL = Standard language used to query and manage databases.