

# **DBMS Important Topics - Quick Revision Sheet with Examples**

## **1. Core DBMS Basics (Very Important)**

- Data Models: instance, schema, levels of abstraction
- Database Languages: DDL, DML
- Overview of database design and storage management

## **2. Relational Model (Foundation for SQL)**

- Relational model concepts: relation, schema, instance, attributes, keys
- Relational algebra basics: projection, selection, join, union, difference, rename
- Relational query language

## **3. SQL (Most Important Section for Exams)**

- Basic SQL DDL: CREATE, ALTER, DROP, constraints (primary key, unique, not null, check)
- Basic SQL DML: INSERT, UPDATE, DELETE, SELECT
- Queries on single & multiple relations
- Cartesian Product, Natural Join, Inner Join, Outer Join
- Selection, Projection, Rename
- Aggregate Functions: SUM, COUNT, AVG, MAX, MIN
- Set Operations: UNION, INTERSECT, EXCEPT
- Nested Queries & Subqueries
- Integrity Constraints: primary key, foreign key, referential integrity

## ■ Examples for Quick Practice

### Relational Algebra Examples

- $\sigma$  salary > 50000 (Employee) → Select employees with salary > 50000
- $\pi$  name, dept (Employee) → Project name and dept columns from Employee
- Employee ■ Department → Natural Join between Employee and Department
- Employee  $\div$  Project → Employees working on all projects

### SQL Examples

- CREATE TABLE Student (ID INT PRIMARY KEY, Name VARCHAR(50), Age INT, Dept VARCHAR(20));
- INSERT INTO Student VALUES (1, 'Alice', 20, 'CSE');
- SELECT Name FROM Student WHERE Age > 18;
- SELECT Dept, COUNT(\*) FROM Student GROUP BY Dept;
- SELECT \* FROM Employee E INNER JOIN Department D ON E.DeptID = D.ID;
- SELECT Name FROM Employee WHERE Salary > (SELECT AVG(Salary) FROM Employee);
- CREATE VIEW CS\_Students AS SELECT \* FROM Student WHERE Dept = 'CSE';

### 4. Advanced (Study if Time Allows)

- Views & Materialized Views
- Index creation & User-defined domains (basic understanding)
- Relational algebra advanced operations: division, assignment

### ■ 1-Day Preparation Strategy

- Morning: Relational Model + SQL Basics (DDL, DML, Constraints)
- Afternoon: SQL Queries (joins, subqueries, aggregates, set operations)
- Evening: Integrity Constraints, Views, Relational Algebra basics
- Night: Practice 2–3 past exam questions (if available)

■ If you only have half a day: Focus only on SQL Queries + Relational Model + Constraints (most exam marks come from these).