■ DBMS Mid-Term Cheat Sheet (1-Page Quick Revision)

1. Core Concepts

- Schema vs Instance → Schema = design, Instance = current data
- Data Models → Hierarchical, Network, Relational (most important)
- DDL (schema definition) vs DML (data manipulation)

2. Relational Model

- Keys → Primary key (unique, not null), Foreign key (referential integrity)
- Relational Algebra → σ (select), π (project), ■ (join), ∪, ∩, –, ÷ (division)

3. SQL Essentials

- DDL → CREATE, ALTER, DROP (with constraints: PK, FK, CHECK, UNIQUE, NOT NULL)
- DML → INSERT, UPDATE, DELETE, SELECT
- Joins → INNER JOIN (matching), OUTER JOIN (includes unmatched), NATURAL JOIN
- Set Ops → UNION, INTERSECT, EXCEPT
- Aggregate → COUNT, SUM, AVG, MAX, MIN + GROUP BY, HAVING
- Nested Queries → Subquery inside WHERE / FROM / SELECT

4. High-Yield SQL Queries

- Find all students older than 18 → SELECT * FROM Student WHERE Age > 18;
- Count students per dept → SELECT Dept, COUNT(*) FROM Student GROUP BY Dept;
- Find employees with salary > avg → SELECT Name FROM Employee WHERE Salary > (SELECT AVG(Salary) FROM Employee);
- Join Employee & Department → SELECT E.Name, D.DeptName FROM Employee E INNER JOIN Department D ON E.DeptID=D.ID;

■ Exam Strategy

- 1. First attempt short SQL queries (easy marks).
- 2. Then go for Relational Algebra & theory (constraints, keys).
- 3. Leave complex nested queries for the end if time is short.

■ Focus: SQL Queries + Relational Model + Constraints = 70% of marks.