

Unit III — Relational Query Languages

Database Management System | BMB IT 03 / KMBN IT 03

Unit III: Relational Query Languages

Exam Blueprint (2022–2025 papers)

Topic	Years asked	Marks
Relational algebra operations	2022, 2024, 2025	7 & 10
Relational calculus (tuple & domain)	2022, 2023, 2025	2 & 10
SQL — DDL and DML commands	2024, 2025	2 & 10
Joins and their types	2025	7
Aggregate functions	2024	2
CREATE TABLE / INSERT syntax	2024, 2025	2
Indexes in SQL	2022, 2023	2
Characteristics of SQL	2024	2
Writing queries in SQL + relational algebra	2022	10

YE QUESTION BAAR-BAAR AAYA HAI

2022 me ek numerical-style question aaya tha — SUPPLIER/PARTS/CATALOG schema par **relational algebra** aur **SQL** dono me query likhni thi. Section 6 me wahi solved hai.

1. Introduction to SQL

DEFINITION - RATTA MAARO

SQL (Structured Query Language) is the standard **non-procedural (declarative)** language for defining, manipulating and controlling data in a relational DBMS. The user specifies **what** data is needed, not **how** to get it.

1.1 Characteristics of SQL

- **Non-procedural / declarative** — say what, not how
- **English-like syntax**, easy to learn
- **Set-oriented** — operates on whole sets of rows, not one row at a time
- **Standardised** (ANSI/ISO), so portable across DBMS products
- Supports **DDL, DML, DCL and TCL** in one language
- Can be used **interactively** or **embedded** in a host language

- **Case-insensitive** for keywords
- Supports **views**, **indexes**, **constraints** and **transactions**

1.2 The Four Sub-Languages

Language	Purpose	Commands
DDL	Defines structure	<code>CREATE</code> , <code>ALTER</code> , <code>DROP</code> , <code>TRUNCATE</code>
DML	Manipulates data	<code>INSERT</code> , <code>UPDATE</code> , <code>DELETE</code>
DCL	Controls access	<code>GRANT</code> , <code>REVOKE</code>
TCL	Manages transactions	<code>COMMIT</code> , <code>ROLLBACK</code>

YAHAN 90% STUDENTS GALTİ KARTE HAIN

`DELETE` vs `TRUNCATE` — 2-marker favourite. **DELETE** (DML) removes selected rows and **can be rolled back**. **TRUNCATE** (DDL) removes *all* rows, keeps the structure, cannot be rolled back. **DROP** (DDL) removes the **whole table** including its structure.

1.3 Common Data Types

Type	Meaning
<code>CHAR(n)</code>	Fixed-length string
<code>VARCHAR(n)</code>	Variable-length string
<code>INTEGER</code> / <code>INT</code>	Whole number
<code>NUMERIC(p,s)</code> / <code>DECIMAL(p,s)</code>	Number with precision <i>p</i> and scale <i>s</i>
<code>REAL</code> / <code>FLOAT</code>	Floating-point number
<code>DATE</code>	Date value
<code>TIMESTAMP</code>	Date and time
<code>BLOB</code> / <code>CLOB</code>	Binary / character large object

2. DDL — Defining the Structure

2.1 CREATE TABLE

```
CREATE TABLE STUDENT (
    RollNo    INT          PRIMARY KEY,
    Name      VARCHAR(50)  NOT NULL,
    Email     VARCHAR(50)  UNIQUE,
    Age       INT          CHECK (Age >= 17),
    City      VARCHAR(30)  DEFAULT 'Lucknow',
    DeptID    INT,
    FOREIGN KEY (DeptID) REFERENCES DEPARTMENT(DeptID)
);
```