(Time 3 Hours) **(Total Marks: 80)**

N.B.: 1. Question No.1 is compulsory.
2. Answer any three out of remaining questions.
3. Assume suitable data if necessary.
4. Figures to the right indicate full marks.

Q1 (20)

(a) Write a short note on DDL Commands.
(b) Explain Characteristics of databases.
(c) Explain generalization and Specialization.
(d) Explain binary relational operations in relational algebra.

Q2.
(a) Draw and explain DBMS System architecture. (10)
(b) Explain stored procedures and functions with example. (10)

Q3
(a) Draw EER diagram for Library management System. (10)
(b) Explain join operations in relational algebra. (10)

Q4.
(a) Explain steps for Mapping the ER and EER Model to the Relational Model. (10)

(b) Write SQL Syntax for (10)

Course Table

Cid	Course _Name	Staff_ name	Duration(in weeks)	fees
1	DBMS	Menon	6	45000
2	PCPF	Rai	4	28000
3	JAVA	Rajput	2	16000
4	DSA	Govilkar	5	32000

Student Table

Sid	name	Location	Cid
1	Anaya	Thane	1
2	Rajiv	Navi_mumbai	4
3	Suyog	Dadar	2
4	Pari	Andheri	3
5	Dhariya	CST	1

(i) Create above course table also insert values.
(ii) Create student table with c_id as foreign key.
(iii) Arrange courses in descending order of fees .
(iv) Find name of course student name 'Rajiv 'has enrolled for.
(v) List down names of all students whose course duration is more than 3.

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Q5

(a) Define normalization. Explain 1NF,2NF and 3NF with example. (10)

(b) Explain Serializability with types. (10)

Q6.write short note on **(Any four)** (20)

(a) Role of DBA.

(b) Need of Normalization.

(c) Primary key and Foreign key.

(d) ACID properties.

(e) Nested and Sub queries in SQL.

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