**Time: 2½ hrs.** **Marks:75**

**Note:**
1. All questions are compulsory with internal choice.
2. Draw neat diagrams wherever necessary.
3. Figures to the right indicate full marks.

**Q.1 Answer the following (any four)** **(20)**

(a) Define Database. Explain advantages of DBMS.
(b) What is data independence in DBMS? Explain the types.
(c) State and explain types of attributes with their notations.
(d) Write a short note on entity vs attribute.
(e) Explain level of abstraction in DBMS.
(f) Explain database architecture in DBMS. Draw neat diagram.

**Q.2 Answer the following (any four)** **(20)**

(a) Define Normalization. Explain 1NF and 2NF with example.
(b) Explain different types of operators in relational algebra.
(c) What is meant by lossless-join decomposition? Explain in brief.
(d) Explain functional and transitive dependency.
(e) Explain 3 DML operations with suitable example.
(f) Explain any 4 aggregate functions with example.

**Q.3 Answer the following (any four)** **(20)**

(a) Describe concept of subqueries with example.
(b) What are the main tasks performed by DBA?
(c) What are the views? Give syntax and example of creating view.
(d) What is a join? explain different types of joins.
(e) Describe system and object privileges and also describe use of Grant and Revoke commands with suitable example.
(f) What is database protection? Write some security issues in database.

**Q.4 Answer the following (any three)** **(15)**

(a) Explain different types of Database users.
(b) Write a note on Specialization and Aggregation.
(c) Explain Group by and Order by with the suitable example.
(d) What is selection and projection in relational algebra? explain with example.
(e) Explain string, data and math functions of SQL.
(f) With the help of example, explain DROP VIEW command.

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