



Time: 2½ hrs.

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 three) (15)**
- (a) What is DBMS? Explain advantages & disadvantages of DBMS.
  - (b) Explain View of Data. Explain Abstraction & levels of Abstraction.
  - (c) Explain Basic concept of Relational Model.
  - (d) Explain Basic Building of a Data Model.
  - (e) Explain different types of E-R Relationships with examples.
  - (f) Explain E-R diagram. Explain symbols/notations used in E-R diagram.
- Q.2 Answer the following (any three) (15)**
- (a) Explain the significance of Primary key, Candidate key & Super key.
  - (b) Explain 2<sup>nd</sup> Normal form with suitable example.
  - (c) Explain need of Normalization.
  - (d) State & explain any 2 operations of relational algebra with example.
  - (e) Explain Union operation & Intersection operation with example.
  - (f) Explain 1<sup>st</sup> normal form with suitable example.
- Q.3 Answer the following (any three) (15)**
- (a) Write a short note on DDL and DML.
  - (b) Explain Nested Queries with suitable example.
  - (c) Explain Aggregate function with suitable example.
  - (d) What are different types of Joins in SQL? Explain with suitable example.
  - (e) Explain with suitable example Set Operations.
  - (f) Consider the following Entities and Relationships  
Department (dept\_no, dept\_name, location)  
Employee (emp\_no, emp\_name, address, salary, designation)
    1. Find total salary of all computer department employees.
    2. Find the name of department whose salary is above 10000.
    3. Count the number of employees in each department.
    4. Display the maximum salary of each department.
- Q.4 Answer the following (any three) (15)**
- (a) Describe ACID properties for Transaction.
  - (b) Explain Time Stamp Based Protocol.
  - (c) When does Deadlock happen? How to prevent them if Deadlock takes place?
  - (d) List & Explain different states through which Transaction goes during its Execution.
  - (e) Explain the concept of Transaction.
  - (f) Explain Database Recovery Management.
- Q.5 Answer the following (any three) (15)**
- (a) What is PL/SQL? Explain the significance of PL/SQL Engine.
  - (b) Explain PL/SQL Identifiers & Keywords.
  - (c) State & Explain the Operators in PL/SQL.
  - (d) How does Data Manipulation done for PL/SQL? Explain giving example.
  - (e) What is Package? Explain the syntax & example of creating Package.
  - (f) Explain the Syntax of PL/SQL.

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