

Duration: 3hrs

[Max Marks:80]

- N.B.: (1) Question No 1 is Compulsory.  
(2) Attempt any three questions out of the remaining five.  
(3) All questions carry equal marks.  
(4) Assume suitable data, if required and state it clearly.

- 1 Attempt any FOUR [20]  
a Compare the traditional file system with DBMS.  
b Write short notes on: Data independence and types of data independence.  
c Explain various data definition (DDL) statements in SQL.  
d What is Redundancy? Explain the different anomalies in relational database.  
e Discuss Serializability? Explain conflict and view serializability in a transaction
- 2 a Describe Joins and different types of Joins operation in Relational algebra. [10]  
Distinguish between Natural join and Inner join in Relational algebra.  
b Explain different Set Relational Algebra Operator with example. [10]
- 3 a Draw ER Diagram for a Company has the following description : [10]  
Company has several departments. Each department may have several Location. Departments are identified by a name, D\_no; Location. A Manager control a particular department. Each department is associated with number of projects. Employees are identified by name, id, address, dob, date\_of\_joining. An employee works in only one department but can work on several project. We also keep track of number of hours worked by an employee on a single project. Each employee has dependent. Dependent has D\_name, Gender and relationship  
b What is Entity set? And also define Relationship set., List and explain the symbols used to draw ER diagram [10]
- 4 a Consider the following schema for employee database. [10]  
Employee (emp\_id, empname, street, city, date of join)  
Works (empname, company-name, salary)  
Company (company-name, city)  
Manages (empname, manager-name)  
Write SQL queries for the following statements:  
i. write a SQL query to find empname who is getting salary between 500 and 2000. '  
ii .Find the total no of employees 'in each company with salary greater than 50000

iii. Create Employee relation using SQL commands by considering emp\_id as primary key.

iv. Select all Employee with a name have "S" in fourth position. "

v .Write a query to sort the records in the descending order of the their salary

- b What are the different aggregate functions used in SQL? Explain with the help of example. [10]
- 5 a Define Normalization and different types of normalization methods with example [10]
- b What do you mean by Lock Based protocol? Explain Two Phase (2PL) locking protocol and different types/versions of 2PL. [10]
- 6 a Describe concept of Transaction and also illustrate ACID properties in detail. [10]
- b What is Transitive dependency. State and explain in which Normal form this concept is used. [10]

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