

(Time: 3 Hrs)

Marks: 80

N.B. : 1. Question no. 1 is **Compulsory**.

2. Solve any **Three** questions out of remaining **Five** questions.

- Qu-1 a) Explain concept of a View in SQL. 5
- b) What is the role of Metadata in data warehouse? 5
- c) Use **Figure-1** and write SQL query to retrieve the name of each employee who has a dependent with the same first name and is the same sex as the employee 5
- d) What is Write-Ahead Logging and when it is used? 5
- Qu-2 a) Explain the ARIES Recovery Algorithm with suitable example. 10
- b) Explain Star Schema. Draw Star Schema for Supermarket. 10
- Qu-3 a) Explain Multilevel Indexes with suitable example. 10
- b) Explain Data Warehouse architecture in detail. 10
- Qu-4 a) Explain OLAP Operations in Multidimensional Data Model with suitable example. 10
- b) Explain Query Processing and Optimization in Distributed Databases. 10
- Qu-5 a) Explain the concept, Immediate Data Extraction and Deferred Data Extraction in data warehouse with suitable example. 10
- b) List and Explain Data Fragmentation in distributed databases. 10
- Qu-6 Attempt the following.
- a) There are two levels for assigning privileges to use the database system: i) The account level and ii) The relation/table level. Give example of each considering the database shown in **Figure-1**. 5
- b) Write short note on "SQL Injection". 5
- c) What is multiple granularity locking? Under what circumstances is it used? 5
- d) Suppose we want to check whenever an employee's salary is greater than the salary of his or her direct supervisor in the COMPANY database shown in **Figure-1**. Several events can trigger this rule: inserting a new employee record, changing an employee's salary, or changing an employee's supervisor. Create a SALARY_VIOLATION trigger which will notify the supervisor about the salary violations. 5

EMPLOYEE

Fname	Minit	Lname	<u>Ssn</u>	Bdate	Address	Sex	Salary	Super_ssn	Dno
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DEPARTMENT

Dname	<u>Dnumber</u>	Mgr_ssn	Mgr_start_date
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DEPT_LOCATIONS

<u>Dnumber</u>	<u>Dlocation</u>
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PROJECT

Pname	<u>Pnumber</u>	Plocation	Dnum
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WORKS_ON

<u>Essn</u>	<u>Pno</u>	Hours
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DEPENDENT

<u>Essn</u>	<u>Dependent_name</u>	Sex	Bdate	Relationship
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Figure-1. Schema diagram for the COMPANY relational database schema.

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