C6-R3: ADVANCED DATABASE MANAGEMENT SYSTEM

NOTE:

> 1. **Answer question 1 and any FOUR from questions 2 to 7.**
> 2. **Parts of the same question should be answered together and in the same sequence.**

Time: 3 Hours **Total Marks: 100**

1.
a) What are materialized views? How they are different from views?
b) What is a method in Object Relational Model (ORM)? And what is the principal use of methods? What kinds of methods are supported by Oracle ORM?
c) Differentiate between Interquery Parallelism and Intraquery Parallelism.
d) Explain the concept of recursive queries with an example.
e) What is an ECA rule and what can we do with them?
f) Explain the concept of Multidimensional Data Model with the help of an example.
g) What is the advantage of using XML database over file–based approach while implementing web databases?

(7x4)

2.
a) The table below lists customer/car hire data. Each customer may hire cars from various outlets throughout India. A car is registered at a particular outlet and can be hired out to a customer on a given date.

CarReg	Make	Model	CustNo	CustName	HireDate	outletNo	OutlecLoc
M5450GD	Ford	Escort	C102	Amit	14/3/08	01	Delhi
M5450GD	Ford	Escort	C219	Kiran	21/4/08	01	Delhi
N734TPR	Nissan	Sunny	C102	Amit	30/4/08	01	Delhi
M134BRP	Ford	Escort	C345	Ajay	14/3/08	02	Noida
M134BRP	Ford	Escort	C102	Amit	20/5/08	02	Noida
M611OPQ	Nissan	Sunny	C789	Vikas	20/5/08	02	Noida

   i) Identify the functional dependencies represented by the data shown in the table. State any assumptions you make about the data.
   ii) Using the functional dependencies identified in i) above, describe and illustrate the process of normalization by converting Table to Boyce Codd Normal Form (BCNF) relations. Identify the primary and foreign keys in your relations.
b) Discuss the concept of object identifiers (OIDs) in an object DBMS and discuss four different approaches for the representation of OIDs.

(10+8)

3.
a) Discuss the relationship between online transaction processing (OLTP) and data warehousing and identify the major differences between these systems.
b) Discuss various concurrency control schemes used in Distributed Databases using Locking Protocols.

(9+9)

4.
a) Explain why it may be impractical to require serializability for long-duration transactions.
b) Can a non dense index be used in the implementation of an aggregate operator? Why or why not?
c) What is "pushing selections and projections" during query optimization? Explain with examples.

(4+6+8)

5.
a) How are deadlock dealt within a distributed system? Discuss the functionality of any one method in detail.
b) What is partitioned parallel execution? How can we parallelize existing sequential operator evaluation code?

(9+9)

6.
a) Discuss the semijoin method for executing an equijoin of two files located at different sites. Under what conditions is an equijoin strategy efficient?
b) Describe an association rule among hierarchies with an example.
c) How are Datalog programs evaluated? Discuss both recursive and non-recursive Datalog program.

(6+6+6)

7.
a) Discuss content based retrieval in Multimedia Databases.
b) What are the differences among immediate, deferred and detached execution of active rule actions.
c) Explain the concept of nested transactions, multilevel transactions, transaction workflows and transaction monitors.

(5+5+8)