B5.2-R3: OBJECT ORIENTED DATABASE MANAGEMENT SYSTEM

NOTE:

1. **Answer question 1 and any FOUR questions from 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) State the relationship between persistent and transient objects? How is persistence handled in object database systems?

b) Compare object relational DBMS and object oriented DBMS with data sharing and data modelling perspective.

c) Define recoverable, cascadeless and strict schedules and compare them in terms of their recoverability.

d) Discuss various types of concept hierarchies by giving one example of each type?

e) Define object view? How is it different from view?

f) Explain with an example how data manipulation is performed in Object Store?

g) A data cube C has k dimensions and each dimension has p distinct values in the base cuboid. Assume that there are no concept hierarchies associated with the dimensions.

   i) What are the minimum and maximum number of (including base and aggregate) cells possible in the data cube C?

   ii) What are the minimum and maximum numbers of cells possible in the base cuboid?

(7x4)

2.

a) Discuss the role of Object Management Group (OMG) in forming standard in Object Oriented Programming (OOP) technology.

b) Discuss the differences between optimistic and pessimistic concurrency control.

c) How does a DBMS exploit encapsulation in implementing support for Abstract Data Types (ADTs)?

(6+6+6)

3.

a) Discuss the extensions that are needed to query processing and query optimization to fully support the Object Relational Database Management Systems (ORDBMS)?

b) Discuss with examples, various object oriented features that are supported in Oracle.

c) Explain, how a dimensional model differs from Entity Relationship (ER) model.

(6+6+6)

4.

a) Give details of the centralized two-phase commit protocol in a distributed environment. Outline the algorithms for both coordinator and participants.

b) Define distributed join. Explain its representation in relational algebra.

c) What is meant by nested table? Discuss various operations of nested table with examples.

(6+6+6)

5.

a) Discuss, how OLAP extension to SQL can support data analysis and decision-support applications.

b) Explain the difference between data replication in a distributed system and maintenance of a remote backup site.

c) Is a high performance transaction system necessraility a real time system? Why or why not?

(6+6+6)

6.

a) Explain with an example the Booch methodology for object oriented (OO) design.

b) Give an example of join that is not simple equi-join for which portioned parallelism can be used. What attributes should be used for partitioning?

c) Explain briefly the need for formulative middleware standard like CORBA in distributed object oriented systems.

(6+6+6)

7.

a) Discuss with examples the manipulation objects in an ObjectStore database.

b) Why does the need of encryption still require when a DBMS already support discretionary and mandatory access control?

c) State the functionality of executive information systems?

(6+6+6)