

B4.3-R4: OBJECT ORIENTED DATABASE MANAGEMENT SYSTEMS

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 is meant by type orthogonality in Object Query Language?
 - b) Define Similarity measure? State any two similarity measures used for Documents.
 - c) Define materialized view? How is it different from virtual views?
 - d) What are the differences and similarities between objects and literals in the ODMG Object model?
 - e) Define nested relation? State any two applications where it is useful.
 - f) What are collection hierarchies? Give an example that illustrates how collection hierarchies facilitate querying.
 - g) What are the advantages and disadvantages of declaring constructor private?

(7x4)

2.
 - a) Discuss the functionality of each component of Object Oriented DBMS.
 - b) Define Virtual function. Discuss implementation differences between calling virtual function and normal function.
 - c) Explain the use of wrappers in Mediator based systems?

(8+6+4)

3.
 - a) Explain, in detail, the features of Semantic Database Systems.
 - b) Discuss all design steps of database design for an ORDBMS.
 - c) Define user defined types. How do you implement in SQL?
 - d) Explain how ordering relationships on User Defined Types (UDTs) is performed?

(6+4+5+3)

4.
 - a) What is persistent programming language? How do they make object persistent?
 - b) Differentiate between transient and persistent object?
 - c) State the differences between data centric and document centric XML documents.

(6+6+6)

5.
 - a) Discuss in detail various features of Coad/Yurdon notation for OO design with an example.
 - b) Is it possible to create nested relations using features of SQL? Justify.

(10+8)

6.
 - a) State, why update driven approach (constructs and uses data warehouses) is preferred rather than Query driven approach (which applies wrappers and integrators) for the integration of multiple heterogeneous information sources. Also describe situations where the query driven approach is preferable over the update driven approach?
 - b) For what kind of applications, Semi-structured Data Model is appropriate? Compare and contrast semi-structured data model with relational model.

(10+8)

- 7.
- a) Explain, with an example, Multi-way relationship in ODL. What advantages you get when using such relationships in ODL?
 - b) State different alternatives of pre-computation of cuboids for handling OLAP queries and compare the feasibility of each pre-computation alternative in terms of query response time and space consumption.
 - c) Suppose that a data warehouse consists of the four dimensions, *date*(*date_id*, *day*, *month*, *Quarter*, *Year*), *spectator*(*spectator_id*, *Name*, *status*, *phone*, *address*), *location*(*location_id*, *location-Name*, *Street*, *city*, *province*, *Country*), and *game*(*game_id*, *Game Name*, *description*, *Producer*) and the two measures, *count* and *charge*, where *charge* is the fare that a spectator pays when watching a game on a given date. Spectators may be students, adults, or seniors, with each category having its own charge rate. Starting with the base cuboid [*date*; *spectator*; *location*; *game*], what specific *OLAP operations* should one perform in order to list the total charge paid by student spectators at GM Place in 2004.

(7+6+5)