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 primary characteristics should an OID pases?
b) List the name of diagrams used in Booch methodology for object oriented design.
c) What steps must be taken in order to maintain good object-oriented design or object relational design principles in data base modeling?
d) What is well formed XML document? How it is different from validated XML documents?
e) Explain the Architectural Stack Diagram for Object-Oriented Data Model.
f) What is the purpose of inheritance? How does object oriented technique help produce flexible and extensible software?
g) What are collection hierarchies? Give an example that illustrates how collection hierarchies facilitate querying.

(7x4)

2.

a) Explain with an example concept of Generalization, Association, Composition and Aggregation in object hierarchy? Differentiate Aggregation with Composition.
b) What is Semi Structured Data Model? What does the Semi-Structured Data Model do? Compare and Contrast Semi-Structured Data Model with Relational Model? What are the issues with Semi-Structured Data?

(8+10)

3.

a) How does the concept of an object in object-oriented model differ from the concept of an entity in the ER diagram?
b) Explain how object views allow database developers to add OOP structures on top of their existing relational tables and enable them to develop OOP features with existing relational data.
c) Explain the XML Model with its components.

(6+6+6)

4.

a) How Binary relationship and referral integrity are reported in an object oriented data model? Explain them with example.
b) What is persistent programming language? How do they make object persistent?
c) What is meant by overloading of a function when it is used?

(8+6+4)

5.

a) Explain how Object Management Group standard (OMG) – CORBA allows object to communicate in distributed heterogeneous environment, providing transparency across network, operating system and programming language boundaries.
b) Describe different techniques for storing XML data in a Relational Database Management System.
c) Structured Query Language (SQL) is used in relational database as an intermediary language by which application software can communicate with the database system. Object oriented databases have their own query language called OQL. How does the use of OQL compare to the use of SQL improve the performance in terms of application speed of the OODBMS?

(4+8+6)

6.

a) Suppose that a data warehouse consists of four dimensions date, spectator, location and game and the two measured count and charge, where charge is the fare that a spectator pays when watching a game on a given date, spectators may be students, adult or seniors. With each category having its own charge rate. Draw a star schema diagram for the data warehouse and state how many cuboids are needed to build the data cube?

b) State the new kinds of data types supported in object-database system. Give an example for each and discuss how the example situation would be handled if only RDBMS were available.

(9+9)

7.

a) What is the importance of checkpoints in the Database Management Systems? How checkpoints are used in the system log file of Database Management Systems?

b) Nick want to create a database, but is unsure of the model that will suit his situation. He needs a reliable and efficient database that is also very secure. He also needs a database that can handle his multimedia data in terms of storage and provide easy querying.
Which of the two data models object oriented or object relational is the most appropriate and why?

c) What is polymorphism in object oriented programming? What are the advantages of it?

(6+6+6)