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 possess?

b) State principal features of Object Query Language?

c) How do you handle sparse multi dimensional matrix when a data warehouse is implemented as a data cube? Discuss any one implementation method, along with suitable data structures and the space needed, to elegantly overcome this sparse matrix issue.

d) What are the differences and similarities of attribute and relationship properties of user-defined class?

e) State the similarities and differences between the Object-oriented data model and object relational model.

f) What is active database? How does it differ from object oriented database?

g) Are there any limitations of Document Type definitions? If so, list them.

(7x4)

2.

a) Discuss with neat diagram the architecture along with functionality of each component of Gemstone.

b) State the advantages of using OO programming.

c) How objects are created in OQL?

(6+6+6)

3.

a) Explain, in detail, Booch Methodology for OO design.

b) Define nested relation. Explain, with an example, how to create nested relations using features of SQL

c) State salient differences between OLAP and OLTP systems.

(6+6+6)

4.

a) How binary relationship and referential integrity are represented in an object oriented data model. Explain them with examples.

b) Compare relationships representation in OO data model with Relational model.

c) How persistent programming language features make object persistent? Explain.

(8+6+4)

5.

a) Define virtual function. Discuss implementation differences of virtual function in C++ and Java with an example

b) How is linear recursion used for specifying recursive queries? Illustrate with an example.

c) Compare RDBMSs with ORDBMSs. Describe an application scenario for which you chose ORDBMS and explain why?

(6+6+6)

6.

a) State the need of using DTD for XML? Explain the format and various attributes of DTD with examples.

b) Define inheritance. Discuss different types of inheritance by providing one example for each type.

c) Explain how specialization and generalization concepts are handled in Object relational model

(7+5+6)

7.

a) Describe the differences between the following architectures for the integration of a data mining system with a database or data warehouse system: no coupling, loose coupling, semi-tight coupling, and tight coupling. Also mention which architecture is the most popular one and why?

b) What are the factors to efficiently select cuboids or sub-cubes for partial materialization?

c) How do you create user defined types (UDT) in SQL? Discuss different ways of creating such types with examples.

(6+5+7)