B4.3-R4: OBJECT ORIENTED DATABASE MANAGEMENT SYSTEMS

«QP_SRLNO»

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) Differentiate Encapsulation and Abstraction Concepts on Object Orientation.
b) What are friend functions? Explain their characteristics with a suitable example.
c) Describe difference between shallow equal and deep equal?
d) What is OQL? Explain with a suitable example?
e) How does CORBA support interoperability?.
f) Give a few examples of applications that can benefit from using XML.
g) Draw and explain the architecture of OODBMS.

(7x4)

2.

a) Give a well formed XML document that corresponds to the DTD given below:

```
<!DOCTYPE Stars [
<!ELEMENT Stars (Star*)>
<!ELEMENT Star (Name, Address+, Movies)>
<!ELEMENT Name (#PCDATA)>
<!ELEMENT Address (Street, City)>
<!ELEMENT Street (#PCDATA)>
<!ELEMENT City (#PCDATA)>
<!ELEMENT Movies (Movie*)>
<!ELEMENT Movie (Title, Year)>
<!ELEMENT Title (#PCDATA)>
<!ELEMENT Year (#PCDATA)>
]>
```

b) What is the role of Wrapper templates in query patterns for information integration? What is the need for capability based optimization? Give examples to support your justifications.

(9+9)

3.

a) Discuss the similarities as well as differences between OODBMS and ORDBMS**.**
b) Define ODL. What are multi-way relationships in ODL? Illustrate with a suitable example.
c) Consider the schema given below:

StarsIn(movieTitle, movieYear, starName)
MovieStar(name, address, gender, birthdate)

Write a procedure to take a star name as argument and delete from **StarsIn and MovieStar** all tuples involving that star.

(6+6+6)

4.

a) Discuss the different approaches for addressing the need to provide persistence for objects using relational databases.
b) Discuss the advantages and disadvantages associated with different mapping frameworks in ORDBMS? Add to call-level APIs. Why?.

(9+9)

5.

a) Suppose we wish to keep a genealogy. We shall have one class, Person. The information we wish to record about persons includes their name (an attribute) and the following relationships: mother, father, and children. Give an ODL design for the Person class. Be sure to indicate the inverses of the relationships that, like mother, fa th e r, and ch ild ren, are also relationships from Person to itself. Is the inverse of the mother relationship the ch ild re n relationship? Why or why not? Describe each of the relationships and their inverses as sets of pairs.

b) Using the ODL schema given below write the following queries in OQL:

i) Find the manufacturers that make both PC's and printers.

ii) Find the manufacturers of PC's, all of whose PC's have at least 20 gigabytes of hard disk.

```
class Product
    (extent Products
     key model)
 {
    attribute integer model;
    attribute string manufacturer;
    attribute string type;
    attribute real price;
 };


class PC extends Product
    (extent PCs)
 {
    attribute integer speed;
    attribute integer ram;
    attribute integer hd;
    attribute string rd;
 };


class Laptop extends Product
    (extent Laptops)
 {
    attribute integer speed;
    attribute integer ram;
    attribute integer hd;
    attribute real screen;
 };


class Printer extends Product
    (extent Printers)
 {
    attribute boolean color;
    attribute string printerType;
 };
```

(6+6+6)

6.

a) Discuss ORION database system in terms of data model support, architecture and specific features.

b) What are Object Data types? Discuss different Object type supported in Oracle Database?

(9+9)

7.

a) Discuss Semantic Data Model and OML statements to Insert and Delete.

b) Comparing SIM with SQL with examples.

(9+9)