B. E. Sem 7 (Rev.) I.T. Advanced Database Systems 17/12/08

283/p3/ksl/upq/oct 012/2kl.

Con. 5668-08. **(REVISED COURSE)** **RC- 7367**

(3 Hours) **[Total Marks : 100**

N. B. : (1) Question No. **1** is **compulsory**.
(2) Solve any **four** questions from remaining **six** questions.
(3) Make **suitable** assumptions whenever **required**.

1. (a) A financial institution offers different investments schemes to its customers such as shares and debentures. The company also accept fixed deposits from the general public, institutions and its employees. The company keeps a database with valuable information about its customers (such as id, name and address) and financial instruments. **10**

Fixed deposite have varying terms of 1, 2 or 3 years.

The company also raises debentures periodically. The debentures may be either convertible or non convertible.

Company also calls shares periodically. The company issues two kind of shares : equity shares and preferred shares.

Draw EER diagram of this database and show subtypes, attribute defined specialization, disjointness and total specialization etc.

Assume any data if necessary.

(b) Explain the following concept with the help of example. **10**

(i) Object identity
(ii) Object structure.

2. (a) Describe the steps for mapping EER Schema to an ODB Schema. **10**
(b) Explain the unstructured and structured complex objects. **10**

3. (a) Find out the data transfer cost of distributed query processing for following queries. **15**

" For each employee, retrieve the employee name and name of the department for which employee works."

Site 1 :

Employee

Fname	Minit	Lname	SSN	Bdate	Address	Sex	salary	SSSN	DNo

10000 records

each record is 100 bytes long.

SSN field is 9 bytes Fname is 15 bytes

DNo field is 4 bytes Lname is 15 bytes

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Site 2 :
Department

Dname	Dnumber	Mgrssn	Mgrstartdate

100 records
each record is 35 bytes long
Dnumber field is 4 bytes Dname 10 bytes
mgrssn is 9 bytes.
Query is submitted to result site 3. Consider different strategies for executing this query and find which strategy is best using natural join and semijoin.

(b) Explain representing multivalued attribute using VARRAY. 5

4. (a) Explain different types of temporal reational databases. 10
(b) Draw an explain architecture for parallel database with the help of example. 10

5. (a) Describe the following OQL concepts. 10
   (i) Database entry points
   (ii) Path expression
   (iii) Aggregate functions.
(b) What are the software components in client sever system ? Explain two tier and three tier client server architecture. 10

6. (a) Consider the following description for sales order documents. 12
"An order document is comprised of several sales orders. Each individual order has a number and it contains the customer information, the date when the order was received, and the items ordered. Each customer has number, name, street, city and zip code. Each item has an item order, parts information and quantity. The parts information contains a number, a description of the product and its unit price. The number should treated as attribute when considering XML representation of the document.
   (i) Write down appropriate DTD that captures all the information.
   (ii) Create an XML sample instance including one customer and two items.
(b) Explain Federated database management system. 8

7. Write short notes on :— 20
   (a) Xquery and Xpath
   (b) Active database
   (c) ODL
   (d) Mobile database.
