No. of Printed Pages : 4

MCS-043

MCA (Revised)

Term-End Examination

December, 2011

02711

MCS-043 : ADVANCED DATABASE DESIGN

Time : 3 hours *Maximum Marks : 100*

Note : *Question No. **1** is **compulsory**. Answer **any three** questions from the rest.*

1. (a) Identify the functional dependexies which hold for the following table : **5**

Emp No.	Name	Address	Dept	Dept. Manager
E_1	N_1	A_1	D_1	E_1
E_2	N_2	A_2	D_1	E_1
E_3	N_1	A_2	D_1	E_1
E_4	N_3	A_3	D_2	E_9
E_9	N_4	A_4	D_2	E_9

(b) Construct an E-R diagram for a training institute which imparts soft skills. The institute maintains records about instructors, students, classes, assignments, results (Theory as well as practicals) class timings for each student. The number of subjects, in which the candidate is enrolled and past performances in different subjects is recorded. Document all assumptions that you make about the mapping constraints. **8**

(c) How is the check pointing information used in the recovery operation following a system crash in DBMS. Explain. 7

(d) Explain the concept of inheritance in object oriented database system, with the help of an example. 5

(e) What are assertions ? Explain with an example. 5

(f) How can you protect your database from statistical query attacks ? Explain. 5

(g) Explain Clustering in data mining. 5

2. (a) Distinguish between the followings with appropriate examples. 8

(i) Centralized two phase locking and Distributed two phase locking.

(ii) XML and HTML

(b) Consider the following database 6
employee (emp_name , street , city) , working (emp_name , factory , name_salary) factory (factory_name , city) Manager (emp_name ,manager_name) Write the relational algebra expressions for the following queries.

(i) Find the names , streets and cities of all factory employees who work for factories F1 and F5 and earn more than 25000.

(ii) Find all the factory employees who live in the same city as the factory where they are working.

(c) With the help of an example explain insertion and deletion of aromatics. 6

3. (a) Describe the reference architecture of a distributed DBMS with the help of a block diagram. 7

(b) How does postgre SQL perform storage and indexing of tables ? Briefly discuss the type of indexes involved in postgre SQL. 7

(c) What is semi structured data ? Explain with an example. 6

4. (a) Define Hash join and explain the process and cost calculation of Hash join with the help of an example. 7

(b) Describe two phase commit protocol in distributed databases. 8

(c) List the features of semantic database. 5

5. (a) Discuss the 5^{th} normal form and domain key normal form with a suitable example in each. **8**

(b) What do you mean by deadlock in DBMS ? How can you detect a deadlock ? Suggest a technique that can be used to prevent it. **8**

(c) What are challenges designing multimedia databases ? Discuss. **4**