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MCS-043 (S)

07270

MCA (Revised)

Term-End Examination

June, 2014

MCS-043 (S) : ADVANCED DATABASE MANAGEMENT SYSTEMS

Time : 3 hours *Maximum Marks : 100*

*Note : Question number 1 is **compulsory**. Answer **any three** questions from the rest.*

1. (a) Explain the time stamping protocals used for concurrency control. Also, discuss the multi-version scheme of concurrency control. **10**

   (b) Differentiate between Query processing and Query optimisation. Also, explain Query trees and Query graphs using an example for each. **10**

   (c) Consider a relational scheme **10**

   $R = (A, B, C, D, E)$, let M is the following set multivalued dependencies :

   $M = (A \rightarrow\rightarrow B\,C,\ B \rightarrow\rightarrow C\,D,\ E \rightarrow\rightarrow A\,D)$

   Give a lossless join decomposition of scheme R into 4NF.

   (give clear justification of your answer)

   (d) What is an assertion ? What is the syntax for declaration of an assertion ? Also, give an example of assertion. **10**

2. (a) Differentiate between Relational DBMS, Object-relational DBMS and Object-oriented DBMS. Also, give one application for each of these DBMS. **10**

(b) Consider the relations defined below :

DOCTOR (Reg_No, Name, Tel_No, City)

PATIENT (P_Name, Street, City)

VISIT (P_Name, Reg_No, date_of_visit, fee)

Where the Reg_No and P_Name
Identify the Doctor and the Patient uniquely respectively.

(i) Write the DDL statement for the Hospital Database. Clearly specify the Primary and Foreign keys. **4**

(ii) Write the following queries in SQL : **3x2=6**

- Get the Name and Reg_No of Doctors who are in "Mumbai".
- Find the City of Patient(s) who visited Doctor with Reg_No "64236" on 31st March 2011.
- Get the name of Doctor and the total number of patients who have visited a doctor with Reg_No "72342".

3. (a) Define fragmentation and replication in distributed databases. Explain two phase locking protocol in distributed databases. **10**

(b) What are the SQL command for granting permission ? Explain, why statistical databases are more prone to disclosure ? Explain with the help of an example. **5**

(c) Differentiate between XML and HTML. Create an XML schema for the list of books available in the library and their details. (like ISBN, Name, Author, Year, Publisher, Cost) 5

4. (a) What is meant by deadlocks in Databases ? How can they be presented ? Write an algorithm that check whether the concurrent transactions are in deadlock or not ? 10

(b) What are the advantages of mobile databases ? Also, explain any three characteristics of mobile databases. 5

(c) What is ETL in the context of Data warehouse ? What are different transformations that are needed during the ETL process ? 5

5. Explain the following with the help of examples or illustration. 4x5=20

(a) Semantic Databases

(b) Clustering in Data Mining

(c) Security features of Oracle

(d) UML class diagram.