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CST-203

ADVANCED DIPLOMA IN INFORMATION TECHNOLOGY (ADIT) / BACHELOR IN INFORMATION TECHNOLOGY (BIT)

00808

Term-End Examination
June, 2010

CST-203 : RELATIONAL DATABASE MANAGEMENT SYSTEMS

Time : 2 hours *Maximum Marks : 50*

Note : *There are **two** sections in this paper. **Section-A** consists of objective type questions and short answer type questions. All questions in **Section-A** are **compulsory**. **Section-A** carries **26** marks. **Section-B** consists of three questions. Attempt **any two** questions from **Section-B**. **Section-B** carries **24** marks.*

SECTION - A

1. There are 10 objective type questions. There are four choices for each question select the best choice. If you feel that none of the given choices is correct, then mark '0' as your answer. Each question carries 1 mark : **1**

(a) The domain of a tuple must be :

(i) Continuous

(ii) Contiguous

(iii) Finite

(iv) None of the above

(b) What kind of participation must a weak entity type have in the identifying relationship with the owner entity type ? **1**

(i) Partial

(ii) Total

(iii) No participation

(iv) None of the above

(c) How many serial schedules are possible for 5 parallel transactions ? **1**

(i) 120 (ii) 25

(iii) 24 (iv) 125

(d) In a view with a CHECK option, updates to the view : **1**

(i) Must keep the record within the view

(ii) Can take the record off the view

(iii) Must take the record off the view

(iv) Can keep the record within the view

(e) Which of the following is **not** a file organisation method ? **1**

(i) Hash (ii) Mound

(iii) Sequential (iv) Index

(f) In an RDBMS, a transaction refers to : **1**

(i) Withdrawal of money in a banking application

(ii) Adding a tuple to a relation

(iii) Any unit of work

(iv) None of the above

(g) Which of the following is **not** a language built into SQL ? **1**

(i) DDL (ii) DCL

(iii) DPL (iv) DML

(h) Database security does **not** need which kind of the following security ? **1**

(i) Physical

(ii) Network

(iii) Operating system

(iv) Access control

(i) A person's age can be any whole number between 0 and 150. Which of the following errors in entering the age **cannot** be caught by the appropriate database checks ? **1**

(i) 501 instead of 105

(ii) 10.2 instead of 102

(iii) 47 instead of 74

(iv) Fifteen instead of 15

(j) Which of the following is an advantage of distributed databases ? **1**

(i) Lower cost

(ii) Better software quality

(iii) Greater security

(iv) Higher reliability

2. (a) For the entity "person" bank account number is a single or multi valued attribute. Explain why ? 1

(b) A database has a sequence NUMBER_LIST. On using the sequence to generate the values of the attribute "number" into an item table, the tuples in the item table contain. 3

number	item	price
1001	soap	25.00
1003	toothbrush	20.00
1005	doll	240.00

Give 3 possible reasons why the numbers are 1001, 1003, 1005,.. rather than 1001, 1002, 1003.

(c) Write the SQL query to list the students of all the classes of a school in order of merit for each class. For the school the list should be class-wise and within a class it should be marks-wise. Make suitable assumptions as necessary. 3

3. Distinguish between the following with an example whereever appropriate :

(a) RESTRICT and CASCADE mode. 3

(b) Binary and multiple mode locks 3

(c) Theta join and equi-join 3

SECTION - B

There are three questions in this section. Attempt **any two**. This section carries 24 marks. Please give to the point answers.

4. (a) Consider a Traffic Management System for a large city. It consists of different types of intersections (2, 3 or more roads), road names, number of lanes in each road, type of traffic allowed, maximum speed allowed. Each intersection has lights to allow traffic to move for a specified period, which changes with time of day, holidays and number of vehicles waiting on each side. Identify the functional dependencies, candidate keys and integrity constraints for the database. Design normalised relations for the system. Make suitable assumptions. **8**

(b) Describe with a diagram how a sequential file access mechanism works. In which situation would this be a useful access method ? **4**

5. (a) Consider a real estate property registration system Here a property can have various kinds of owners such as individual, a company, a partnership firm and soon. Property can be authorised for residential, commercial or mixed use. A property can have one or more owners and an owner can own one or more properties. A property has **7**

an address and characteristics like area and grade of construction. It is taxed based on these features. Records have to be kept regarding the tax due from each owner as well as any overdue amounts. Draw an ERD, stating all possible assumptions.

(b) Consider a train reservation system where the reservation table stores information on the seats booked for each date for each train. A party desirous of making a reservation can update the table with their requirement. List the steps involved in this transaction and show how optimistic concurrency control can be used to ensure database consistency of the reservation table. 5

6. (a) Consider a relation student - table (student - code, name, program, address, date-of-birth) what kind of key is required to assign to a student. Explain why ? 3

(b) Consider the relation zoo-t (animal-kind, animal-name, enclosure-number, animal-id, keeper-id, keeper-name, date-of-admissions, animal-age). Animal kind can be water animals, ground animals.

(i) In which normal form is this relation and why ? 2

(ii) Decompose zoo-t into 3rd normal form. 3

(c) (i) Write down the four basic forms of authorisation to a database item. **2**

(ii) What is the difference between ALTER and PROPAGATE access control ? **2**
