C 2696   (Pages : 3)   Name.............................

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SECOND SEMESTER B.Sc. DEGREE EXAMINATION, MAY 2014

(UG—CCSS)

Core Course—Computer Science

CS 2B 03—DATABASE SYSTEM DESIGN AND RDBMS

(2009—2011 Admissions)

Time : Three Hours   **Maximum : 30 Weightage**

I. Answer *all* twelve questions :

1. ———— represents a collection of conceptual tools for describing data, data relationships, data semantics and data constraints.

    (a) Data model.   (b) Data dictionary.

    (c) Database systems.   (d) Database schema.

2. ———— is a language that enables users to access or manipulate data.

    (a) DDL.   (b) DML.

    (c) DCL.   (d) None of these.

3. The portion of DML that involves information retrieval is called ————.

    (a) Query language.   (b) Query processor.

    (c) Database schema.   (d) Transaction manager.

4. In DBMS architecture, ———— level describes the details of how data is actually stored in computer's memory.

    (a) Physical level.   (b) External level.

    (c) View level.   (d) Conceptual level.

5. ———— express the number of entities to which another entity can be associated via relationship set.

    (a) Cardinality ratio.   (b) Attribute inheritance.

    (c) Aggregation.   (d) Participation.

6. In the relational model, relationships between relations or tables are created by using :

    (a) Composite keys.   (b) Determinants.

    (c) Candidate keys.   (d) Foreign keys.

7. The command to remove rows from a table 'CUSTOMER' is ————.

8. The SQL keyword used to sort the result is ————.

                                                                  Turn over

9 The ensure that a system consisting of a set of transactions will never enter into a dead⎵
   state we always use a ——— type of protocol.

10 An aborted transaction must have no effect on the state of the database. This is to ens⎵
   ——— property.

11 A schedule of concurrent transactions that guarantees the effect of a schedule produced w⎵
   these transactions are run serially in some order called ———.

12 A method of determining the serializability by imposing an ordering among transaction⎵
   advance is ———.

                                                                    (12 × ¼ = 3 weighta⎵

II. Answer *all* nine questions :

13 What is the difference between a database schema and a database instance ?

14 List the different components of a query processor.

15 Define functional dependency.

16 Write the syntax of DELETE command in SQL.

17 Write any four privileges included in SQL standard.

18 State the augmentation rule defined in Armstrong's axioms.

19 What are the various states associated with a transaction execution ?

20 What is a stored procedure ?

21 What are the different phases in a Two-Phase Locking protocol ?

                                                                    (9 × 1 = 9 weighta⎵

III. Answer any *five* questions :

22 Distinguish between Primary key, Composite primary key and Candidate key.

23 Create an EMPLOYEE table and write SQL statements for the following queries :

   (a) List all employee names having pay > 15,000.

   (b) Display all employee names starting with 'S'.

   (c) Calculate the total pay of all employees.

24 Explain the syntax of CREATE TABLE command with example.

25 Suppose there are two relations *r* and *s*, such that the foreign key B of *r* references the prim⎵
   key A of *s*. Describe how the trigger mechanism can be used to implement the *on de⎵
   cascade option*, when a tuple is deleted from *s*.

26 Discuss the desirable properties of transactions.

27 Explain the distinction between the terms serial schedule and serializable schedule.

28 Define deadlock. What are the different methods available to deal with deadlock problem⎵

                                                                    (5 × 2 = 10 weight⎵

Answer any *two* questions :

29 (a) Explain about various data models used to describe the design of a database.

   (b) What are the various data types available in SQL ? Explain the usefulness of each with example.

30 (a) Discuss various fundamental operations in relational algebra.

   (b) Explain about various normal forms.

31 (a) With the help of a block diagram, explain about various states of a transaction.

   (b) Briefly explain about lock-based protocols and timestamp-based protocols.

(2 × 4 = 8 weightage)