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Total No. of Questions—6] [Total No. of Printed Pages—8

CO-12403

**Fourth Semester Computer Engineering
(N-2012)**

(Common to CO, IT)

**RELATIONAL DATABASE
MANAGEMENT SYSTEM**

Time : 3 hrs.

M.M. 100

Note :— 1. *Attempt five Questions in all.*
2. *Question No. 1 is compulsory.*

1. (a) Fill in the blanks with the most appropriate word(s) in the following statements :

- (i) There are abstraction levels in ANSI/SPARC model of a database system.
- (ii) The information about the structure and organization of data in a database is called

- (iii) A is a series of primitive database operations used to accomplish a meaningful end-user task.
- (iv) A is responsible for authorizing access to a database and coordinating and monitoring its use.
- (v) The capacity to change the internal schema without having to change the conceptual schema in a database system is called
- (vi) The of a relation is the number of attributes of its relation schema.
- (vii) The candidate key whose values are used to uniquely identify tuples in the relation is called
- (viii) clause in SQL SELECT statement is used to order the rows in the result.
- (ix) A relation schema R is in if every nonprime attribute A in R is fully functionally dependent on the primary key of R.

- (x) The name of default cursor in PL/SQL is (10)

(b) Choose the most appropriate option as answers to the following questions :

- (i) Which of the following constraints is used to specify a candidate key in a table ?

- (a) NOT NULL
- (b) UNIQUE
- (c) CHECK
- (d) REFERENCE

- (ii) Which of the following data models is a semantic model ?

- (a) Relational
- (b) Entity-Relationship
- (c) Hierarchical
- (d) Network

(iii) Which of the following is not a desired characteristic of a database ?

- (a) Coherence
- (b) Referential Integrity
- (c) Redundancy
- (d) Multiple views

(iv) If a value of an attribute X uniquely determines the value of another attribute Y in a relation R , then Y is called

- (a) determinant of $FD\ X \rightarrow Y$
- (b) functionally dependent on X
- (c) redundant
- (d) foreign key of R

(v) Boyce Codd Normal Form (BCNF) is also called

- (a) 2NF
- (b) $2\frac{1}{2}$ NF
- (c) 3NF
- (d) $3\frac{1}{2}$ NF

(vi) Which of the following is not a DML command ?

- (a) INSERT
- (b) ALTER
- (c) UPDATE
- (d) DELETE

(vii) Which of the following is a wildcard character used with LIKE operator for string comparison ?

- (a) _ (underscore)
- (b) * (asterisk)
- (c) ? (question mark)
- (d) # (pound)

(viii) Which of the following is not a group function in SQL ?

- (a) SUM
- (b) FLOOR
- (c) MAX
- (d) STDDEV

(ix) The four properties of a database transaction are generally referred to as

- (a) ACID
- (b) BASE
- (c) SALT
- (d) PURE

(x) Which of the following is a type of join operation in relational databases?

- (a) Equi-join
- (b) Natural-join
- (c) Left-join
- (d) All of the above

(10)

2. (a) Explain the 3-layer architecture of a database system. (10)

(b) What are advantages and disadvantages of a database system ? (5)

(c) Define the terms 'primary key', 'candidate key' and 'foreign key'. (5)

3. (a) What do you understand by the term 'constraint' ? Explain various types of constraints in relational databases. (10)

(b) Differentiate between record-based and semantic data models. (5)

(c) Explain briefly the concept of referential integrity. (5)

4. (a) What do you understand by database normalization ? Explain first three normal forms in detail. (10)

(b) What is the role of Data Definition Language (DDL) in SQL ? List various DDL commands supported by SQL. (5)

(c) Explain 'GROUP BY' and 'HAVING' clauses in SQL SELECT statement with suitable example. (5)

5. (a) Explain various looping control structures supported by PL/SQL with appropriate examples. (10)

(b) Write a short note on join operation on relations. (5)

(c) Write a short note on database locking. (5)

6. Write short notes on following (any five) :

(i) Transaction

(ii) INSERT command

(iii) Database Trigger

(iv) Trivial Functional Dependency

(v) Entity

(vi) Database Schema

(20)

SECTION - A

1. State whether the following statements are true or false :

- (i) A table can have more than one primary key.
- (ii) A set of privileges assembled together is called a ROLE.
- (iii) A SELECT statement cannot be used to lock a table.
- (iv) A single query cannot have WHERE, GROUPBY, HAVING and ORDER BY clauses simultaneously.
- (v) A single trigger can be used for handling Insert/delete/update on a table.
- (vi) Each individual view of a data base is called subschema.

(ix) What do you mean by Keywords, Clause and Statement ?

(x) What are functional Dependencies in normalization ?

(40)

SECTION - D

4. Attempt any three parts :

(i) What is PL/SQL ? Explain the block structure of PL/SQL ?

(ii) Explain the concept of Database Access & Database Security.

(iii) What do you mean by data models ? What are various data models ? Explain.

(iv) What is :

(i) Data Definition Language.

(ii) Data Manipulation Language.

(iii) Dropping a table.

(iv) Roll back

(v) Privileges.

(25)