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BICS-038

DIPLOMA – VIEP – COMPUTER SCIENCE AND ENGINEERING (DCSVI)

00956

Term-End Examination

June, 2016

BICS-038 : DATABASE MANAGEMENT SYSTEM

Time : 2 hours *Maximum Marks : 70*

Note : *Attempt **five** questions in all. Question no. **1** is **compulsory**. Each question carries equal marks.*

1. Choose the correct answer from the given four alternatives : *7×2=14*

(a) Primary key cannot be null, relates to _____ .

(i) Entity Integrity Constraint

(ii) Referential Integrity Constraint

(iii) Domain Integrity Constraint

(iv) None of the above

(b) SQL commands CREATE, ALTER and DROP come under the purview of _____ .

(i) DDL

(ii) DML

(iii) DCL

(iv) All of the above

(c) _____ constitutes Data Control Language (DCL).

(i) Transaction Control Language (TCL)

(ii) Access Control Language (ACL)

(iii) Both (i) and (ii)

(iv) None of the above

(d) Atomicity of attributes is preserved in _____ normal form.

(i) First

(ii) Second

(iii) Third

(iv) None of the above

(e) _____ protocol relates to backup and recovery.

(i) 2 Phase Locking

(ii) 2 Phase Commit

(iii) Both (i) and (ii)

(iv) None of the above

(f) Verbs identifies _____ of an ER diagram.

(i) Entities

(ii) Relation

(iii) Attributes

(iv) None of the above

(g) In an ER diagram, the "kind-of" relationship relates to

(i) Generalization

(ii) Aggregation

(iii) Relation

(iv) None of the above

2. Explain the following with the help of suitable examples : *7+7=14*

(a) Loss-less Decomposition

(b) Dependency Preserving Decomposition

3. (a) Draw an ER diagram for the statement given below :

"Trainers trains trainees in an institution affiliated to a university, the institution has various departments to offer training."

Choose proper set of attributes for each component in the diagram.

Prepare database for each component, as per the identified schema. 7

(b) Differentiate the following : 7

(i) Serial Schedule and Serializable Schedule

(ii) 3NF and BCNF

4. (a) Consider the following database schema :

EMPLOYEE (ESSN, ENAME, DOB, DEPT_NO, SALARY)

DEPENDENT (ESSN, DEPEND_NAME, RELATION, DOB)

DEPARTMENT (DEPT_NO, DEPT_NAME, MANAGER)

Perform the following queries using both Relational algebra and SQL : *(2+2)×3 =12*

(i) Determine the details of dependents of the employee "MANOJ".

(ii) Who is the manager of the department, where the employee with ESSN code 2082 works ?

(iii) Find the DOB of the son of the employee having ESSN code 2082.

(b) Will the SQL statement

SELECT * FROM STUDENT;

serve the purpose of Selection (σ)

or Projection (π) operation ? Justify your answer with suitable arguments. *2*

5. (a) Briefly discuss the following : *3×3 =9*

(i) Primary Indexes

(ii) Secondary Indexes

(iii) Clustering Indexes

(b) Discuss the approaches of concurrency management, which are applied to deal with the problem of deadlock. *5*

6. Explain the concept of transaction management in concurrent environment. Discuss the role of ACID properties for managing the transactions in concurrent environment. *4+10=14*

7. (a) Discuss the Insert, Delete and Update anomalies that occur, if the relation is not in 2NF. Use suitable examples for your discussion. 7

   (b) Explain the concept of multivalued dependencies with suitable examples. 7

8. Write short notes on the following : $4 \times 3\frac{1}{2} = 14$

   (a) Performance Tuning

   (b) Serializability

   (c) Fourth Normal Form

   (d) Index Data Structures