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(Following Paper ID and Roll No. to be filled in your Answer Book)

Paper ID : 214303 | Roll No. | | | | | | | | | |

MCA

(SEM. III) THEORY EXAMINATION, 2015-16

DATA BASE MANAGEMENT SYSTEM

[Time:3 hours] **[MaximumMarks:100**

Note : Attempt questions from all Sections as per directions.

Section-A

1. Attempt all parts. Write answer of cach part in brief. (2×10=20)

   (a) Differentiate between Physical Level and Logical Level Independence?

   (b) Define Instance and Schema.

   (c) Who are sophisticated users?

(d) Differentiate between simple and composite attributes.

(e) What is total and partial participation of an entity set E in a relationship set R?

(f) Write Anomalies with Interleaved Execution of a transaction.

(g) What is multi version protocol?

(h) Define multi valued dependency.

(i) Differentiate Deferred Vs Immediate database modification.

(j) Prove that if in a relational schema, the no of attributes in a primary key is one, the schema will be at least in 2NF.

Section-B

Attempt **any five** questions from this section. (10×5=50)

2. Explain the concept of referential integrity and foreign key with suitable example.

3. What are Relational Model Mapping Cardinalities? Give example for each cardinalities used in DBMS.

4. Explain Cursors, Sequence and Procedures used in SQL.

5. Consider the relations:

PROJECT (proj#,proj_name,chief_architect)

EMPLOYEE (emp#,emp_name)

ASSIGNED (proj#, emp_name)

Use relational algebra to exprss the following queries:

(i) Get details of employees working on project COMP33.

(ii) Get the employee number of employees who work on all projects.

(iii) Get details of project on which employee with name 'RAM' is working.

6. A transaction is failed and enters aborted state. Mention the conditins under which we can restart the transaction and kill the transaction.

7. A set of FD's for the relation R={A,B,C,D,E,F} is $AB \rightarrow C, C \rightarrow A, BC \rightarrow D, ACD \rightarrow B, BE \rightarrow C, EC \rightarrow FA, CF \rightarrow BD,, D \rightarrow E$. Find a Canonical cover for this set.

8. Suppose that we decompose the schema R={A,B,C,D,E} into R1and R2 as R1={A,B,C} R2={C,D,E} justify whether it is lossless decomposition or not.

9. Normalize the given relation upto 3NF: R={A,B,C,D} , F={AB $\rightarrow$D,AC $\rightarrow$BD, B $\rightarrow$C}.

Section-C

Attempt **any two** questions from this section. (15×2=30)

10. In an organisation several projects are undertaken. Each projects can employ one or more employees. Each employee can work on one or more projects. Each project is undertaken on the request of client. A client can request for several projects. Each project has only one client. A project can use a number of items and a item may be used by several projects. Draw an E-R diagram and convert it to a relational schema. Identifying relationship, Specialisation /generalization /Aggregation.

11. Consider the following relations with key underlined

lives (person name, street, city)

works (person name, company_name, salary)

located (company name, manager_name)

manages(person name, manager_name)

Now Answer the following using SQL:

(i) Find the names and city of persons who work for manager 'XYZ'.

(ii) Find the names of persons who live in the same city as the company they work for.

(iii) 'XYZ' manager has changed. The new manager is 'PQR'.

(iv) 'DEF' doesn't work anymore.

(v) Create a view Delhi EMP (person_name, company_name, manager_name) of all people who work in Delhi in ascending order of person name.

12. Write short notes on any five:

(a) TRC and DRC.

(b) Transactions

(c) Serializability of schedule

(d) Lock Based Protocols

(e) Deadlock Prevention Protocols

(f) Concurrency control in Distributed System.

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