Printed Pages: 02 **Subject Code: RCA401**

Paper Id: 214237 **Roll No:** | | | | | | | | | | |

MCA
(SEM IV) THEORY EXAMINATION 2018-19
DATABASE MANAGEMENT SYSTEM

Time: 3 Hours ***Total Marks: 70***

Notes: *Assume any Missing Data.*

SECTION A

1. Attempt *all* questions in brief. **2 x 7 = 14**

(a) Differentiate between simple attributes and composite attributes.
(b) What is total and partial participation of an entity set E in a relationship set R?
(c) Write Anomalies with Interleaved Execution of a transaction.
(d) What is multi version protocol?
(e) Define multi valued dependency.
(f) Differentiate Deferred Vs Immediate database modification.
(g)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

2. Attempt any *three* of the following: **7 x 3 = 21**

(a) Explain the concept of referential integrity and foreign key with suitable example.
(b) What are Relational Model Mapping Cardinalities? Give example for each cardinalities used in DBMS.
(c) Explain Cursors, Sequence and Procedures used in SeL.
(d) Consider the relations:

PROJECT (proj #,proj_name,chief architect)

EMPLOYEE (emp#, emp_name)

AS SIGNED (proj#, emp_name)

Use relational algebra to express the following queries:

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

(e) A transaction is failed and enters aborted state. Mention the conditions under which we can restart the transaction and kill the transaction

SECTION C

3. Attempt any *one* part of the following: **7 x 1 =7**

(a). A set of FD's for the relation R-{A,B,C,D,E,F} is AB ->C, C ->A,BC -> D,ACD -> B, BE ->C, EC ->FA, CF -> BD,, f->E: Find a Canonical cover for this set.

(b). Suppose that we decompose the schema R(A,B,C,D,E) into R1 and R2 as R1:{A,B,C} R2:{C,D,E} justify whether it is lossless decomposition or not.

4. Attempt any *one* part of the following: **7 x 1 = 7**

4(a). What do you understand by user authorization? How security and user authorization is done in SQL? Illustrate with an example.

(b). Normalize the given relation up to 3NF: R:{A,B,C,D} F={AB-> D,AC ->BD,B ->C}

5. Attempt any *one* part of the following:

(a) Write short notes on following **7 x 1 = 7**

(i) Lock Based Protocols
(ii) Deadlock Prevention Protocols
(iii) Concurrency control in Distributed System.

(b) In an organization several projects are undertaken. Each project 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.

6. Attempt any *one* part of the following: **7 x 1 = 7**

(a). What is a deadlock? Discuss any one deadlock detection algorithm in database transaction processing

(b).What is the system log used for? What are the typical kinds of records in a system log? What are transaction commit points, and why are they important?

7. Attempt any *one* part of the following: **7 x 1 = 7**

(a) What are different locking techniques for concurrency control?

(b) Describe multi-version concurrency control. What are its benefits and disadvantages in comparison to locking?