Sub Code:NBC302

Paper Id: 910158 Roll No:

MCA (Dual Degree)
(SEM-III) THEORY EXAMINATION 2019-20
DBMS -I

Time: 3 Hours *Total Marks: 100*

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 10 = 20

a. What is a database schema?
b. What is a cardinality ratio?
c. Define foreign key.
d. Define the "integrity rules"
e. What is Normal Form?
f. What is Trigger, in which situations it is used ?
g. What is database recovery? Why backups are important?
h. What do you mean by SQL?
i. What are the ACID properties of a transaction?
j. What does granting a privilege mean?

SECTION B

2. Attempt any *three* of the following: 10x3=30

a. With a neat diagram, explain Three-Schema-Architecture.
b. Explain different type of attributes in ER model with an example
c. Explain the following operations in Relational Algebra and give one example for each i) Cartesian product ii) Natural join iii) Division
d. What is functional dependency? Explain with an example
e. What is a transaction? Discuss the different types of transaction failures.

SECTION C

3. Attempt any *one* part of the following: 10x1=10

a. What is a database? Why do we need a database? Describe the organization of database?
b. What are the different levels of abstraction of a DBMS? Briefly explain each of them.

4. Attempt any *one* part of the following: 10x1=10

a. Explain different type of attributes in ER model with an example.
b. Explain the following with their advantages and disadvantages.
a. Hierarchical database model b. Network database model c. Relational database model

5. Attempt any *one* part of the following: 10x1=10

a. Discuss the different relational algebra operations.
b. What is normalization? What are the different normal forms? Explain First Normal Form, Second Normal Form & Third Normal Form with example.

6. Attempt any *one* part of the following: 10x1=10

a. What is the file system? Explain the sequential files and direct files.
b. What is two-phase locking and how does it guarantee serializability?

7. Attempt any *one* part of the following: 10x1=10

a. Explain locking techniques for concurrency control.
b. Explain the various ways in which database backup and recovery can be implemented.

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