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NMCA-313

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

Paper ID : 2012312 Roll No. | | | | | | | | | |

B.TECH.

Regular Theory Examination(Odd Sem - III), 2016-17

DATABASE MANAGEMENT SYSTEMS

Time : 3 Hours *Max. Marks : 100*

Section - A

1. Attempt all Parts. All parts carry equal marks. Write answer of each part in short. (10×2=20)

a) Is DBA ensures the security of the application server Justify.

b) Write the disadvantages of database system.

c) Define the term foreign key. Can it be NULL?

d) What do you mean by weak entity set?

e) Why are certain functional dependencies called as trivial functional dependencies?

f) Define multivalued dependency. Give an example.

g) State the need of serializability in transaction.

h) What are the problems that occur in transaction if they run concurrently?

i) When does a transaction reach its commit point?

j) List the implementation issues of distributed databases.

Section - B

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

2. Construct an E-R diagram:

A university registrar's office maintains data about the following entities:

a) Courses, including number, title, credits, syllabus and Prerequisites

b) Course offerings, including course number, year, semester, section number, instructor, timings and classroom;

c) Instructors, including identification number, name, department and title. Further, the enrollment of students in courses and grades awarded to students in each course they are enrolled for must be appropriately modeled.

3. Define reference integrity constraint Explain the importance of referential integrity constraint. How is this constraint implemented in SQL?

4. Define joins in SQL. Explain briefly about its types. And also discuss the importance of triggers in SQL with an example.

5. Explain in detail about all functional dependencies based normal form with suitable examples.

6. List the advantages of DBMS over traditional file systems. Briefly explain them. What are the problems associated with three schema architecture.

7. What is distributed databases? What are the advantages and disadvantages of distributed databases? Explain how concurrency control mechanism is performed in distributed databases?

8. What is mean by transaction recovery? Illustrate the importance of log based recovery and checkpoints in transaction processing.

9. Explain in detail about the various issues of multiple-granularity locking protocols.

Section - C

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

10. Explain the division operator with an example. How can a division operator be implemented using other

relational algebraic operators? Consider the following schema for a company database:

Employee (Name, SSN, Salary, DNo, Super SSN)

Department (DName, DNos, MGRSSN)

Project (Pname, Pnumber, DNum)

Works ON (ESSN, PNo, Hours)

Dependent (ESSN, Dependent-name, Sex)

Write the queries in relational algebra to

i) List the name of all employees with at least two dependents.

ii) Find the name of employees who work on all the projects controlled by department 5

iii) Retrieve the name of managers who do not have female dependents

11. Discuss the different type of SQL commands. Also explain the Joins, Aggregate functions and sub-queries with neat example.

12. How can you implement atomicity in transactions? Explain. Also describe the concept of serializability with suitable example.
