Printed Pages: 6 | 561 | NCS-502

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

Paper ID : 110502 | Roll No. | | | | | | | | | |

B. Tech.

(SEM. V) THEORY EXAMINATION, 2015-16

DATA BASE MANAGEMENT SYSTEM

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

Section-A

1 Attempt **all** parts of this section. Answer in brief. (10x2=20)

(a) What are the advantages of file processing system which were removed by the DBMS ?

(b) Give example of a simple, composite attributes of an entity.

(c) What do you mean by referential integrity ?

(d) What do you mean by DML and DDL ?

(e) Distinguish between functional dependency and multivalued dependency.

(f) Define multi version scheme.

(g) What are the pitfalls of lock based protocol ?

(h) What is multimedia database ?

(i) What is union compatibility ?

(j) What are the various anomalies associated with RDBMS ?

Section-B

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

2. 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(s), timings and classroom; (c) students, including student-id, name and program; and (d) instructors, including identification number, name department and title. Further, the enrollement of students in courses and grades awarded to students in each course they are enrolled for must be appropriately modeled.

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Construct an E-R diagram for the registrar:s office. Document all assumption that you make about the mapping constraints.

Q3 Consider the follow:ng relations :

Student (ssn. name. address, major)\

Course (code. title)

Registered (ssn. code)

Use relational algebra to answer the following :

(i) List the codes of courses in which at least one student is registered (registered courses)

(ii) List the title of registered courses.

(iii) List the codes of courses for which no student is registered.

(iv) The titles of courses for which no student is registered.

(v) Names of students and the titles of courses they registered to.

(vi) SSNs of students who are registered for both 'Database Systems' and 'Analysis of Algorithms'.

(vii) SSNs of students who are registered for both 'Database Systems' and 'Analysis of Algorithms'.

(viii) The name of students who are registered for both 'Database Systems' and 'Analysis of Algorithms'.

(ix) List of courses in which all students are registered.

(x) List of courses in which all 'ECMP' major students are registerd.

4. What do you mean by a key to the relation ? Explain the differences between super key. candidate key and primarv key.

5. Define functional dependency. What do you mean bv loss-less decomposition ? Explain with suitable example how function dependencies can be used to show that decompositions are loss-less.

6. Define Normal forms. List the definitions of First, Second and Third normal forms. Explain BCNF with a suitable example.

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7 What is transaction ? Draw a state diagram of a transaction showing its states. Explain ACID properties of a transaction with suitable examples.

8. What are schedules ? What are differences between conflict serialzability and view serialzability ? Explain with suitable example what are cascadeless and recoverable schedules ?

9 What are distributed databases ? List advantages and disadvantages of data replication and data fragmentation. Explain with a suitable example, what are differences in replication and fragmentation transparency ?

Section-C

Note : Attempt **any two** questions from this section.(15x2=30)

10 Describe major problems associated with concurrent processing with examples. What is the role of locks in avoiding these problems.

11 Explain the phantom phenomenon. Devise a time stamp based protocol that avoids the phantom phenomenon.

12. What do you mean by multiple granularities ? How it is implemented in transaction system ?

—x—

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