Sub Code: NCS502

Paper Id: 110518 Roll No:

B.TECH.
(SEM-V) THEORY EXAMINATION 2019-20
DATA BASE MANAGEMENT SYSTEM

Time: 3 Hours *Total Marks: 100*

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

SECTION A

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

a. What is Relational Algebra?
b. Explain normalization. What is normal form?
c. What do you mean by Aggregation?
d. Define Super key, Candidate key, Primary key & foreign key
e. What is Strong & Weak Entity set?
f. What do you mean by Conflict Serializable Schedule?
g. Explain Data Model.
h. What do you mean by loss less join decompositions?
i. Define Concurrency Control.
j. Describe SQL. Explain different Characteristics of SQL.

SECTION B

2. Attempt any *three* of the following: **10 x 3 = 30**

a. Explain data independence with its types.
b. Describe mapping constraints with its types.
c. Define Key. Explain various types of keys.
d. Explain the phantom phenomena. Discuss a Time Stamp Protocol that avoids the phantom phenomena.
e. What is Distributed Database? List advantage and disadvantage of data Replication And data Fragmentation.

SECTION C

3. Attempt any *one* part of the following: **10 x 1 = 10**

(a) Define Join. Explain different types of join.
(b) Discuss the following terms (i) DDL Command (ii) DML command

4. Attempt any *one* part of the following: **10 x 1 = 10**

(a) What is tuple relational calculus and domain relational calculus?
(b) Describe the following terms : (i) Multivalued dependency (ii) Trigger

5. Attempt any *one* part of the following: **10 x 1 = 10**

(a) What do you understand by ACID properties of transaction? Explain in details.
(b) Discuss about deadlock prevention schemes.

6. Attempt any *one* part of the following: **10 x 1 = 10**

(a) Explain Concurrency Control. Why it is needed in database system?
(b) Give the following queries in the relational algebra using the relational schema:
student(id, name)
enrolled(id, code)
subject(code, lecturer)
i). What are the names of students enrolled in cs3020?
ii). Which subjects is Hector taking?

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iii). Who teaches cs1500?
iv). Who teaches cs1500 or cs3020?
v). Who teaches at least two different subjects?
vi). What are the names of students in cs1500 or cs3010?
vii). What are the names of students in both cs1500 and cs1200?

7. Attempt any *one* part of the following: 10 x 1 = 10

(a) Explain Directory System in detail.

(b) Consider the following relational DATABASE. Give an expression in SQL for each following queries Underline records are Primary Key

Employee(**person_name** , street , city)
Works(**person_name**, Company_name ,salary)
Company(**Company_name** , city)
Manages(**person_name**, manager_name)

i). Finds the names of all employees who works for the ABC bank
ii). Finds the name of all employees who live in the same city and on the same street as do their managers
iii). Find the name street address and cities of residence of all employees who work for ABC bank and earn more than 10,000 per annum
iv). Find the name of all employee who earn more than every employee of XYZ
v). Give all Employees of corporation ABC a 10% salary raise .
vi). Delete all tuples in the works relation for employees of ABC
vii). Find the name of all employees in this DATABASE who live in the same city as the company for which they work

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