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D-180595

B. Tech. EXAMINATION, 2018

Semester IV (CBS)

DATABASE MANAGEMENT SYSTEM (CSE, IT)

CS-401

Time : 3 Hours *Maximum Marks : 60*

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt *one* question from each Section. Section E is compulsory. Each question carries equal marks.

Section A

1. Explain the architecture of database. What are the different types of DBMS model exists ? **10**

2. (a) Draw the ER diagram for library management system.

   (b) Explain the basic steps involved in query processing. **10**

Section B

3. (a) Explain about Domain constraints and Referential integrity with examples.

   (b) Explain third normal form and BCNF with example. **5+5=10**

4. Explain the use of lock base protocol. What is 2-Phase protocol ? **10**

Section C

5. The given database Schema is Employee (FName, Initial, Lname, ENO, DOB, Address, Sex, Salary, Supereno, Dno)Department(Dname, Dnumber, mgreno,mgrstartdate)Dept_locations(Dnumber, Dlocation)Project(Pname, Pnumber, plocation, dnum) Works_on(EENO, PNo, hours) Dependent(EENo, Dependent_Name, Sex, BDate, Relationship)

   Write the queries in relational algebra with the above schema :

   (a) Retrieve the name and address of all employees who work for the 'Research department'

   (b) List the project numbers for projects that involved an employee whose lastname is 'Kumar', either as a worker or as a manager of the department that controls the project.

6. What is the role of DBA ? Explain by considering of database of an inventory store. **10**

Section D

7. Explain Hash join algorithm in query processing. **10**

8. (a) Explain serializability. Explain any timestamp protocol.

   (b) Discuss the limitation and advantages of distributed database management system.

5+5=10

Section E

9. Write short notes on the following topics :

   (a) Significance of NULL values

   (b) Primary Key

   (c) Locking protocols

   (d) Candidate key

   (e) Query optimization. **5×4=20**