

MANIPAL INSTITUTE OF TECHNOLOGY MANIPAL

A Constituent unit of MAHE. Manipal

VI SEMESTER B.TECH. (COMPUTER SCIENCE & ENGINEERING) **MAKE-UP EXAMINATIONS, JUNE 2019**

SUBJECT: DATABASE MANAGEMENT SYSTEMS[CSE 3281](OE)

REVISED CREDIT SYSTEM (20/06/2019)

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- ✤ Answer ALL the questions.
- ✤ Missing data may be suitable assumed.

1A. Discuss any four different reasons for the database approach over a traditional file system for the organizational data management. 4M

1B. Consider the following schema: Employee(Fname, Mname, Lname, Essn, bdate, address, salary, Dnumber) Department(Dname, Dnumber, Mgr ssn, Mgr start date) Dependent(Essn,Dependent_name,gender,Relationship) Write relational algebra expressions for the following questions i) Retrieve the Fname, Lname and address of all employees who work for the 'Research' department. ii) Find the average salary of employees in each department. iii) Retrieve the details of employees who have more than two dependents. 4M1C. With an example explain the division operation in relation algebra. 2M 2A. Consider the Employee relational database where the primary keys are underlined. Employee(person_name, street, city) Works(person_name, company_name, salary) Company(company_name, city) Manages(person_name, manager_name) Give an expression in SQL to express each of the following queries: i. Find the names and cities of residence of all employees who earn more than 10.000 Rupees. ii. Find the names of all employees in this database who live in the same city as his / her manager. iii) Find the name of the company with max. no. of employees 4M2B. With examples explain the following constraints on a single relation in SQL. ii) primary key iii) unique iv) check

i) not null

Page 1 of 2

4M

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3A. Design an E-R Schema for Alumni database system to store information about alumni: their basic details and organization details where they are currently working. System keeps Admin staff details who can post messages to Alumni informing about upcoming events. System also keeps the track of messages posted to alumni. 4M

3B.Explain with an example the reduction of the following E-R diagram features to Relational Database Schema.i Weak Entity ii. Many to One Relationship iii) Many to Many relationship iv) One to One relationship.	4M						
3C. Illustrate the difference between super key, candidate key and primary key with an example. How we can find super key of a relation?							
4A.Briefly explain the informal design guidelines for databases?	4M						
4B. Compute the closure of the following set <i>F</i> of functional dependencies for relation schema $R = (A, B, C, D, E)$. F{ $A \rightarrow BC$; $CD \rightarrow E$; $B \rightarrow D$; $E \rightarrow A$ }	4M						
4C. Consider a schema R(A,B,C,D) and functional dependencies {A->B and C->D}. Check which of the below decomposition is lossless or lossy Justify your answer. i) R1(AB) and R2(CD) ii) R1(ABC) and R2(CD)	2M						

5A.What is a conflict serializable schedule? How is a precedence graph used for determining conflict serializability of a schedule? Illustrate with an example. 4M

5B. Explain rigorous two-phase locking protocol that ensures conflict serializability. What benefit does it provide? 4M

5C.With an example explain full outer join operation in relational algebra. 2M