SVKM'S NMIMS

MUKESH PATEL SCHOOL OF TECHNOLOGY MANAGEMENT& ENGINEERING

Academic Year: 2023-2024

Program/s: B.TECH /MBATECH

Year: 2nd Semester: III

Stream/s :IT/DS/CSE CS/Computer/AI

Subject: DATABASE MANAGEMENT SYSTEMS

Time: 3 hrs (10am to 1pm)

Date: 15 /02 / 2024

No. of Pages: 3

Marks: 100

Re Examination(2022-23)

Instructions: Candidates should read carefully the instructions printed on the question paper and on the cover of the Answer Book, which is provided for their use.

1) Question No. 1 is compulsory.
2) Out of remaining questions, attempt any 4 questions.
3) **In all ___5_ questions to be attempted.**
4) All questions carry equal marks.
5) **Answer to each new question to be started on a fresh page.**
6) **Figures in brackets on the right-hand side indicate full marks.**
7) **Assume Suitable data if necessary.**

Q1		Answer briefly:	[20]
CO-1; SO-; BL-2	a.	Discuss the importance of data abstraction with its levels.	
CO-1; SO-; BL-2	b.	Explain with example how other objects like sequence and Index enhance the performance of the database.	
CO-1; SO-; BL-5	c.	Construct an E-R diagram for a hospital with a set of patients and a set of medical doctors. Associate with each patient a log of the various tests and examinations conducted. Details of the test will include test-id, test-name, date, time, and result. Patient's details stored will be ss#, name, insurance, date-admitted, date-checked-out. Doctor's details to get dss#, name, specialization.	
CO-1; SO-; BL-5	d.	Convert the ER diagram of (Q1. C.) into physical schema. Mention Primary Key , Foreign Key of all relations.	
Q2 CO-2; SO-; BL-4	a.	Write relational algebra expression for the following schema: employee (person_name, street, city) works (person_name, company_name, salary) company (company_name, city)	[2+2+3 +3]

<table>
<tr><td></td><td></td><td>Consider the relational database. Give an expression in the relational algebra to express each of the following queries:
1. Find the names of all employees who live in city “Miami”.
2. Find the names of all employees whose salary is greater than $100,000
3. Find the names of all employees in this database who live in the same city as the company for which they work.
4. Find the names, street address, and cities of residence of all employees who work for First Bank Corporation and earn more than $10,000 per annum.</td><td></td></tr>
<tr><td>Q2
CO-3; SO-;
BL-3</td><td>b.</td><td>What is the significance of conversion functions like To_CHAR () and TO_NUMBER() in SQL. Describe its usage with examples.</td><td>[10]</td></tr>
<tr><td>Q3
CO-3; SO-;
BL-2</td><td>a.</td><td>Discuss the atomicity, durability, isolation, and consistency preservation properties of a database transaction.</td><td>[10]</td></tr>
<tr><td>Q3
CO-3; SO-;
BL-4</td><td>b.</td><td>Illustrate redundancy and the problems that it can cause</td><td>[10]</td></tr>
<tr><td>Q4
CO-3; SO-;
BL-4</td><td>a.</td><td>3. Let us assume a table User_Personal as given below.
1. find all the possible functional dependencies that are held.
2. Identify the current Normal Form.
3. Decompose the relation and normalize to 3NF
<table><tr><th>UserID</th><th>U_email</th><th>Fname</th><th>Lname</th><th>City</th><th>State</th><th>Zip</th></tr><tr><td>MA12</td><td>Mani@ymail.com</td><td>MANISH</td><td>JAIN</td><td>BILASPUR</td><td>CHATISGARH</td><td>458991</td></tr><tr><td>PO45</td><td>Pooja.g@gmail.co</td><td>POOJA</td><td>MAGG</td><td>KACCH</td><td>GUJRAT</td><td>832212</td></tr><tr><td>LA33</td><td>Lavle98@jj.com</td><td>LAVLEEN</td><td>DHALLA</td><td>RAIPUR</td><td>CHATISGARH</td><td>853578</td></tr><tr><td>CH99</td><td>Cheki9j@ih.com</td><td>CHIMAL</td><td>BEDI</td><td>TRICHY</td><td>TAMIL NADU</td><td>632011</td></tr><tr><td>DA74</td><td>Danu58@g.com</td><td>DANY</td><td>JAMES</td><td>TRICHY</td><td>TAMIL NADU</td><td>645018</td></tr></table></td><td>[10]</td></tr>
<tr><td>Q4
CO-2; SO-;
BL-4</td><td>b.</td><td>Consider the table:
Student (name, marks, dept, age, place, phone, birthdate).
Write SQL query for following.
1. To list students having place as ‘Mumbai or ‘Delhi
2. To list students having same department(dept) as that of ‘Finance’
3. To change marks of ‘Rahul’ from 81 to 96.
4. To Add a new column studentId with number(3) data type and Primary Key.
5. To list students who are not from ‘Chennai’.</td><td>[10]</td></tr>
<tr><td>Q5
CO-1; SO-;</td><td>a.</td><td>Differentiate Primary key, Candidate key and Super key with examples</td><td>[10]</td></tr>
</table>

BL-2			
Q5 CO-3; SO-; BL-2	b.	What are different types of Serializability? List main rules to implement Conflict Serializability?	
Q6 CO-4; SO-; BL-2	a.	What are the key characteristics of NoSQL? Describe various data types used in NoSQL	[10]
Q6 CO-3; SO-; BL-4	b.	Consider the following table: employee(employee_id, first_name , last_name, email, phone_number , hire_date, job_id , salary, commission_pct , manager_id , department_id) 1. Write a SQL query to find those employees who receive a higher salary than the employee with ID 163. Return first name, last name. 2. Write a SQL query to find out which employees have the same designation as the employee whose ID is 169. Return first name, last name, department ID and job ID. 3. Write a SQL query to find those employees whose salary matches the lowest salary of any of the departments. Return first name, last name and department ID	[3+3+4]
Q7 CO-2; SO-; BL-2	a.	Write a Short Note on following: 1. Properties of functional dependencies 2. Complex vs Composite Attribute 3. Domain Constraint 4. Disadvantages of DBMS	[5+5+5+5]