SVKM's NMIMS

MUKESH PATEL SCHOOL OF TECHNOLOGY MANAGEMENT & ENGINEERING

Programme: MCA Year: I Semester: I
Batch: 2014-15

Academic Year: 2014-2015

Subject: **Database Management System**

Marks: 60
Date: 11/06/2015 Time: 10.00 am to 1.00 pm
Durations: 3 (hrs)

Re-Examination

Instruction: 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.

NB:
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.

1a. Draw ERD for online Railway Ticket Reservation system. Convert ERD into tables. Make assumptions wherever possible. 6

1b. Explain with appropriate examples (Any Three) 6

1. Super key
2. Projection operation in relational Algebra
3. Left outer join
4. Partial participation
5. Logical level independence

2a. ***Write the SQL statement of given queries:*** 6

Person(driver_id,name,address)
Car(license, model, year)
Accident(report_number, date, location)
Owns(driver_id, license)
Participated(report_number, license, driver_id,damage_amount)

1. Add a new accident to the database; assume any values for required attributes
2. Delete all accident details which occurred 1 year before the current date
3. Update the model from 'Swift' to 'Swift Desire' after 2013.
4. Display the location and the driver name who were involved in accidents whose damage amount is more than a lac
5. Display the driver name and car model which was involved in an accident on a particular day. Say 10/10/2013

2b. List five responsibilities of a database-management system. For each responsibility, explain the problems that would arise if the responsibility were not discharged. 6

3a. For the given schema 6

Employee(fname,mint,lname,ssn,bdate,address,sex,salary,super_ssn,dno)
Department(dname,dno,mgr_ssn,mgr_start_date)
Project(pname,pnumber,plocation, dnum).

Give the relational algebra expressions for the following queries

1. Select the employees who work in department no 4 and make over 25000 per year
2. Display the employee first name, bdate and salary of department number 5. Use rename operation for this query
3. Write an expression to count the number of employees in every department
4. Retrieve the name and address of all employees who work for research department
5. For every project located in Mumbai list the project number, the controlling department number, and the department manager's last name, address and birthdate

3b. What is a schedule? Characterize schedules based on recoverability? 6

4a. Consider the relational schema of the relation SCHEDULE shown below. 6
SCHEDULE(Student-id, Class-no, Student-name, Student-Major, Class-Time, Building-room, Instructor). Assume the following functional dependencies
Student-id→Student-name
Student-id→Student-major
Class-no→Class-time
Class_no→Building-Room
Class-no→Instructor
What is the highest normal form of this relation? What type of data anomalies does this relation have? Give examples. Also convert the relation to the next higher normal form

4b. What is a trigger? What are the types of trigger? 6

5a. What is RAID Technology? How is reliability improved using RAID 6

5b. Give the difference between 3Nf and BCNF with example 6

6a. Explain the following terms: 6

1. Transaction
2. Durability
3. Concurrency
4. Serializability

6b. Explain lock based protocols? 6

7. Write short notes on any 4:- 12

1. Shadow paging
2. Aggregate functions in sql
3. DML
4. Data constraints
5. Lossless join dependency

——— x ———