**SVKM's NMIMS**
**MUKESH PATEL SCHOOL OF TECHNOLOGY MANAGEMENT & ENGINEERING**

Programme: MCA Year: I Semester: I

Batch: 2016-17

**Academic Year: 2016-2017**

Subject: Database Management Systems

Date: 30 May 2017

Marks: 70
Time: 10.00 am to 1.00 pm
Durations: 3 (hrs)
No. of Pages: 2

**Re-Examination**

**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.**

| | | | |
|---|---|---|---|
| 1 | A | What are the three levels of data abstraction? | 2 |
| | B | State the difference between primary key constraint, unique key constraint and not null constraint. | 2 |
| | C | How deadlock occurs in database? | 2 |
| | D | With an example explain briefly the concept of many to many cardinality. | 2 |
| | E | Explain third normal form with an example. | 2 |
| | F | What is a weak entity set? | 2 |
| | G | Why are views required? | 2 |
| 2 | A | Construct an ER Diagram for car insurance company. The customers can possess one or more car. Each car is associated with one or more accidents. Database is required for maintaining the details of customers, claim amount, with details pertaining to the accident venue and insured amount. | 7 |
| | B | Discuss the entity integrity and referential integrity constraints with suitable example | 7 |
| 3 | A | Explain the following relational algebra operators with examples<br>a. Selection operator<br>b. Generalized projection<br>c. Left outer join | 7 |

B Consider a relational schema 7

Customer(cname, ccity, phone)
Loan(lno, branch_name, amount)
Borrower(cname, lno)
Depositor(cname, accono)
Branch(bname, bcity)
Account(bname, accno, bal)
Write SQL queries for the following:-

1. Find the name of customers whose city name includes the alphabet 'H'.
2. Find the names of customers who borrowers as well as depositors.
3. Find out the average account balance in each bank.

4 A Explain significant differences between File Processing and DBMS. 7

B Consider the universal relation R(A,B,C,D,E,F,G,H,I,J) having FDs G={A,B}->C, {B,D}->{E,F}, {A,D}->{G,H}, A->I, H->J. 7

a. Find Keys
b. Normalize to 3NF

5 A What is serializability? Explain with an example. Check whether the schedule is a view serializable schedule? 7

Schedule Q

| $T_1$ | $T_2$ | $T_3$ |
|---|---|---|
| Read(A) | | |
| | Write(A) | |
| Write(A) | | |
| | | Write(A) |

B Explain the concept of transaction. Describe ACID properties for transaction. 7

6 A Explain timestamp based protocol. Compare differed and immediate version of log based recovery scheme. 7

B Consider the following relations.(Any 3 queries) 7

Student (ssn.name, address, major)
Course (code, title)
Registered (ssn, code)

Use **SQL** to answer the following :

1. List the codes of courses in which at least one student is registered (registered courses)
2. List the title of registered courses.
3. The titles of courses for which no student is registered.
4. Names of students and the titles of courses they registered to.

7 Write short notes on any two : 14

A Shadow paging
B Dynamic hashing
C RAID Levels