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

Programme: MCA | Year: I | Semester: I

Academic Year: 2018-2019

Subject: Database Management Systems

Date: 24 November 2018

Marks: 100
Time: 10.00 am - 1.00 pm
Duration: 3 Hrs
No. of Pages : 02

Final-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 A library wants to maintain the database of various types of books. A library consists of a section, a member, a book, a publisher. Section has section id, name and phone number. Member has member id, address, telephone, occupation, member name. Member name can be divided into first name, middle name, last name. Book has book number, title, author, price. Publisher has publisher id, name, address, phone number. One section has many books but one book should keep in one section. One member can borrow many books. Many books may publish by one publisher otherwise one publisher may be published many books. (10M)

   Draw an ER diagram for above scenario by assuming relevant constrains and attributes.

   B Explain 2NF and 3NF with example. (5M)

   C Define various levels of data abstractions. (5M)

2 A R(A B C D) has functional dependencies (10M)
F= (AB→ C, C → D, D → A).
This relation is divided in to R1=(A,B,C); R2=(C,D).
(i) List the number of keys.
(ii) Does the given relation is lossless decomposition or not. Why?
(iii) Is dependency preserved for above functional dependencies? Explain.

B Discuss the role of serializability in transaction. Is the following schedules is serial or not with explanation: (10M)

T1	T2
read(X)	
	write(X)
read(X)	
write(Y)	
commit	
	commit

3 A Person(driver-id, name, address) (10M)
Car(model_no, year, color)
Accident(report-number, date, location)
Owns(driver-id, driver_name, license, issuing_date)
Participated(driver-id, license, report-number, damage, amount)
(i) Write the SQL Query:
a. Find the person names who lives in Delhi and second last character is 'U
b. Find the id and name of those drivers who got the license on the same date as Jini got the license
c. Find the total number of accidents occurred for each location
d. Update year and color of the car which model no is i20 Active
e. Delete the records of those accidents which are recorded on 26/JAN/2018

B Write the following operations in relational algebra with examples (10M)
(i) Generalized Projection and Selection
(ii) Full Outer Join
(iii) Rename

4 A Write down the disadvantage "File processing system is not good in the modern era". (10M)

B Comment on following statement "Hashing makes efficient data accessibility possible." (10M)

5 A Explain ACID properties and Transaction states. (10M)

B Define various SQL domain constraints with example. (10M)

6 A How deadlock can be prevented in DBMS. Explain with an example. (10M)

B Explain mapping cardinalities and participation constraints in ER diagram. (10M)

7 Attempt any **two** (2*10=20)
(i) Types of Functional dependencies
(ii) Explain various attributes of ER diagram
(iii) Weak entity set and owner entity set
