Program: MCA

Year: I    Semester : I

**Academic Year: 2018-2019**

Subject: Database Management Systems

Marks: 100

Time: 2.00 pm to 5.00 pm

Date : 16 January 2019

Durations: 3 (hrs)

No. of Pages: 2

**Re-examination (2018-19)**

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 university database stores details about university students, courses, semester and instructor. A student enrolls in a particular course and an instructor who teaches enrolled students consists of identification number, name, department, and course title.    (10M)

   *Consider the following requirements list:*
   - The university offers one or more courses.
   - A student must enroll in a course.
   - A course has a name, the total credit points required to graduate, and the year it commenced.
   - Students have one or more given names, a student identifier, a date of birth, address.
   - Instructor teaches subjects as well as he manages college disciplines.

   a) **Draw ER diagram according to the above requirements.**
   b) **Convert the ER diagram into equivalent schema**

   B  Explain DDL and DML Commands    (10M)

2  A  *employee (employee-name, street, city)*    (10M)

   *works (employee-name, company-name, salary)*

a) Create relations employee and works.
b) Add a new employee to the database; assume any values for required attributes.
c) Delete the works details for the employee "Sachin Parkar".
d) Find all employees in the database who works in State Bank of India.
e) Find the total number of employees in the company.

|   |   |   |   |
|---|---|---|---|
| | B | Write the advantages of database management system. | (10M) |
| 3 | A | Explain conflict serializability with example. | (10M) |
| | B | Explain in detail two phase locking protocol. | (10M) |
| 4 | A | What is transaction? Explain ACID Properties of transaction in detail. | (10M) |
| | B | Suppose that we decompose the schema $R = (A, B, C, D, E)$ into | (10M) |

$$R1(A, B, C) \quad R2(A, D, E)$$

Show that this decomposition is a lossless-join decomposition if the following

set $F$ of functional dependencies holds:

$$A \rightarrow BC, CD \rightarrow E, B \rightarrow D, E \rightarrow A$$

|   |   |   |   |
|---|---|---|---|
| 5 | A | Explain mapping cardinalities and participation constraints in ER diagram. | (10M) |
| | B | Define types of functional dependencies with example. | (10M) |
| 6 | A | What is deadlock and methods for deadlock detection. | (10M) |
| | B | Discuss various Aggregate functions in SQL. | (10M) |
| 7 | | Attempt any **two** | (2*10=20) |

    (i)     Primary key and foreign key constraints
    (ii)    Cascade less transaction
    (iii)   Outer Join

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