

**K. J. SOMAIYA INSTITUTE OF MANAGEMENT STUDIES AND RESEARCH,**  
**Vidyavihar, Mumbai- 400077**

**Program: MCA Semester II**  
**Subject: Database Management System (DBMS)**  
**(End Term Examination)**

**Maximum Marks: 50**

**Duration: 3 hours**

**Date: 19- April, 2017**

**Instructions**

- 1. Be Precise and to the point**
- 2. Support your answers with appropriate examples and diagrams wherever possible**

**QUESTION 1**

**Explain the following terms**

**(10)**

1. Transaction
2. Primary key
3. Strong entity set
4. Lock point
5. Recursive relationship

**QUESTION 2 (Any Four)**

**Answer the following questions**

**(20)**

1. Define data independence and explain types of data independence
2. What do you mean by deadlock detection and recovery?
3. Explain different integrity constraints
4. What are the keys that RDBMS support?
5. Define Normalization. Explain 1NF, 2NF and 3NF with example

**QUESTION 3**

**Draw ER diagram for the following. Identify the attributes associated with each of the entity.**

**(10)**

A waiter takes an order at a table, and then enters it online via one of the six terminals located in the restaurant dining room. The order is routed to a printer in the appropriate preparation area: the cold item printer if it is a salad, the hot-item printer if it is a hot sandwich. A customer's meal check-listing (bill) the items ordered and the respective prices are automatically generated. This ordering system eliminates the old three-carbon-copy guest check system as well as any problems caused by a waiter's handwriting. When the kitchen runs out of a food item, the cooks send out an 'out of stock' message, which will be displayed on the dining room terminals when waiters try to order that item.

This gives the waiters faster feedback, enabling them to give better service to the customers.

**QUESTION 4**

**Answer the following**

**(10)**

1. a) List the reason why null values might be introduced into the database.  
b) Roles and responsibilities of DBA
2. Use of COMMIT, ROLLBACK AND SAVEPOINT
3. Distinguish between conventional file management system and database management system.
4. What is Cartesian Product?

**[OR]**

**QUESTION**

**4**

**(10)**

1. Design a room scheduling system that can be used by both faculty and the staff of the Institute to schedule rooms for events, meetings, classes etc., The schema may contain the following details:
  - a. For each register user: user id, name, password and email id
  - b. For each room: room number, start date of the event, start time of the event, duration of the event, repetition of the event (daily, weekly, monthly, mon-wed-fri, tue-thur-sat and end date of repetitive event)
2. A reservation transaction in a Railway Reservation Systems reserves a seat on the train, issues a ticket, and debits appropriate credit card/debit card account. Assume that one of the integrity constraints of the reservation database is that number of reservations on each train does not exceed the number of seats on the train. Explain how transactions running on this system might violate ACID properties. What would be consequences of these violations?

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