

## MCA (III Year)

## Term-End Examination

December, 2011

CS-15 : RELATIONAL DATABASE  
MANAGEMENT SYSTEM

Time : 3 hours

Maximum Marks : 75

**Note :** Question number 1 is compulsory. Answer any three questions from the rest.

1. (a) For a Automobile showroom determine the entities of interest and the relationships exist among them. Draw the ER - Diagram of this system, properly showing the cardinality. 10
- (b) What is transaction ? What are various states of a transaction ? Explain each state and state transition with the help of a diagram. 10
- (c) What is normalization of database ? Explain advantages of a normalized database. Also differentiate between 2NF and 3NF, with the help of an example. 10
2. (a) Explain multivalued dependency with the help of an example. How is it related to 4 NF. 5

- (b) Consider the following relational schema : 10

University (U\_ID, U\_Name, City)

Registration (U\_ID, P\_ID, Year, Semester,  
No. of students)

Programme (P\_ID, Cost, Duration,  
P\_Name)

Write appropriate queries in SQL for the  
following :

- (i) List the name of the Universities in  
"Delhi" which offer "MCA"  
programme.
- (ii) "BCA" programme of which  
University in "Delhi" is most costly.
- (iii) Find the average cost of M.A.  
Programme.
- (iv) Find the number of students registered  
in the "University of Delhi" in the  
"BA" programme.

3. (a) What is a check point ? How is the check 5  
point information used for recovery in  
databases ?
- (b) Explain the problems associated with 4  
concurrent transactions in databases.

- (c) Differentiate between a schedule, a serial schedule and a serializable schedule with the help of an example. 6
4. (a) What is BCNF ? Explain with the help of an example why BCNF is preferred over 3 NF. 5
- (b) Explain any two schemes used for database security. 5
- (c) Explain ACID properties of a transaction with the help of an example. 5
5. Explain the following : 5x3=15
- (a) Specialization in ER - Diagram.
- (b) Join Dependency
- (c) Distributed Databases
- (d) Query Optimization
- (e) Data Independence
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