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**Third Semester MCA Degree Examination, June / July 2014**  
**Database Management Systems**

Time: 3 hrs.

Max. Marks: 100

**Note: Answer any FIVE full questions.**

- 1
  - a. Discuss the main characteristics of the database approach and how it differs from traditional file system. (08 Marks)
  - b. Explain the Three – schema architecture. (06 Marks)
  - c. Who is a database administrator? What are the various responsibilities of a DBA? (06 Marks)
  
- 2
  - a. Define the term entity. What is the difference between tangible and non – tangible entity? (06 Marks)
  - b. Discuss the design issues that are to be considered while designing on E – R diagram. (04 Marks)
  - c. Consider a BANK database having customer, loan, account, employee and branch as entity types. Each branch of bank allows customers to open accounts and borrow loans. A customer can open more than one account and one account may also belong to one or more customers. Similarly a customer can take out more than one loan and a loan may be held by more than one customer. The bank has a number of employees working in different branches of the bank. Add appropriate attributes for each entity type. Represent the key attribute, weak entity types (if any) and cardinality ratios. Make appropriate assumptions to complete the specification. Design an E – R diagram for the BANK database. (10 Marks)
  
- 3
  - a. Explain the following terms giving examples as required :
    - i) Entity integrity constraint    ii) Referential integrity constraint    iii) ON DELETE CASCADE
    - iv) Union compatibility    v) Left outer join. (10 Marks)
  - b. Explain the various unary and set operations in relational algebra with examples. (10 Marks)
  
- 4
  - a. Which operator of SQL is used to specify string patterns in the queries? (06 Marks)
  - b. What is the purpose of the BETWEEN operator and the IN operator? Explain with examples. (04 Marks)
  - c. Discuss the various DDL and DML commands in SQL, with examples. (10 Marks)
  
- 5
  - a. What is Normalization? Define normal forms, with examples. (10 Marks)
  - b. What is functional dependency? Who specifies the functional dependencies that hold among the attributes of a relation schema? (05 Marks)
  - c. Are normal forms alone sufficient as a condition for a good schema design? Explain. (05 Marks)
  
- 6
  - a. Define transaction. What are the properties of a transaction? Explain with the help of an example. (10 Marks)
  - b. Define lock. What are the two modes of locking? (05 Marks)
  - c. What is database security? Why is it important? Also discuss the various security issues. (05 Marks)

- 7
- a. Explain how to prevent the deadlock. (06 Marks)
  - b. What are the various types of failure that can occur in a system? What is the difference between a system crash and disk crash? (08 Marks)
  - c. Define system log. What types of log records are maintained in it? Explain with the help of an example. (06 Marks)
- 8 Write short notes on the following :
- a. Client – Server architecture.
  - b. Data models.
  - c. JOINS.
  - d. Stored procedures. (20 Marks)

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