Roll No .....

IT - 403

B.E. IV Semester

Examination, June 2014

Data Base Management System

Time : Three Hours

Maximum Marks : 70

Note: i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.

ii) All parts of each question are to be attempted at one place.

iii) All questions carry equal marks, out of which part A and B (Max. 50 words) carry 2 marks, part C (Max. 100 words) carry 3 marks, part D (Max. 400 words) carry 7 marks.

iv) Except numericals, Derivation, Design and Drawing etc.

1. a) What is meant by instance of the database schema. 2

b) Compare specialization and generalization. 2

c) Explain how the ER diagram is converted into tables. 3

d) What is meant by mapping cardinalities? For a binary relationship set what are the possible mapping cardinalities? Explain with diagrams. 7

OR

With the help of block diagram explain the architecture of a DBMS. 7

2. a) Write characteristics of relational model. 2
   b) Specify CODD's norms. 2
   c) What is integrity constraint? Explain the concept of referential integrity. 3
   d) Compare hierarchical, network and relational dap model. Also discuss their various advantages and disadvantages. 7

OR

Discuss different update operations that can be performed on relations. 7

3. a) Differentiate between relational algebra and relational calculus. 2
   b) What are views? Why they can't be used for updates? 2
   c) What is union compatibility? What are the relational algebra operators that require the relations on which they are applied be union compatible? 3
   d) Explain the following relational algebra operations: 7
      i) Natural join ii) Assignment
      iii) Generalized projection iv) Set intersection

OR

For the given database, write SQL queries:
employee (eid, employee - name, street, city)
works (eid, cid, salary)
company (cid, company-name, city)
manager (eid, manager-name)

i) Find the names, street and city of all employees who work for "ABC" and earn more than Rs. 20,000.
ii) Find the names of all employees having "i" as the second letter in their names.
iii) Display the annual salary of all employees. 7

4. a) Specify the need of normalization. 2
   b) State Armstrong's axioms of functional dependency. 2
   c) Consider relation R(PQRSTU) with following dependencies.

   $P \rightarrow Q, ST \rightarrow PR, S \rightarrow U$

   State R is in which normal form? Decompose it to BCNF. Show step by procedure. 3
   d) Define normalization? What is the importance of normalization in database design? Explain INF, 3NF and BCNF with example. 7

OR

What is decomposition? What are the desirable properties of decomposition. 7

5. a) Explain different states of a transaction. 2
   b) Explain two phase locking protocol with example. 2
   c) What is serializable schedule? Describe with suitable example the types of serializable schedules. 3
   d) Explain data fragmentation, replication and allocation techniques for distributed database design. 7

OR

Explain how the concept of object identify in the object oriented model differs from the concept of tuple equality in the relational model. 7

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