ND-147

December-2015

F.Y. M.Sc. (CA & IT)

Database Management System

Time : 3 Hours]   **[Max. Marks : 100**

1. (a) Answer the following : (Any **Ten**)   **20**
   - (1) What is use of Rectangles and Ellipses in ER diagram ?
   - (2) What is the difference between data definition language and data manipulation language ?
   - (3) What is entity ? What is entity set ?
   - (4) What is timestamp in concurrent executions ?
   - (5) What is use of weak entity set in ER diagram ?
   - (6) Give formal definition of relational algebra.
   - (7) Explain use of an assignment operator with an example.
   - (8) What is left outer join ?
   - (9) What is cache memory ?
   - (10) Explain fixed length records in file organization.
   - (11) Define secondary index.
   - (12) What is ACID property of database ? Just list all of them.

2. Answer the following :   **20**
   - (1) Draw an ER diagram for banking enterprise.
   - (2) Write a short note on network model with example.
   - (3) Explain multilevel and clustering index with example.
   - (4) Explain mapping cardinalities.

3. Answer the following : (Any **Two**)   **20**
   - (1) List out Armstrong's axioms. Also, from the given relation schema R, Find the functional dependencies and also find closure of attribute sets.

     R = (A, B, C, G, H, I)

     $A \rightarrow B$

     $A \rightarrow C$

     $CG \rightarrow H$

     $CG \rightarrow I$

     $B \rightarrow H$

(2) From the given schema write queries for given questions.

Employee (person-name, street, city)

Works (person-name, company-name, salary)

Company (company-name, city)

Manages (person-name, manager-name)

(1) Give all employees of First Bank Corporation a 10% salary raise.

(2) Find company with most of employees.

(3) Find employees who work and lives in Ahmedabad.

(4) Find company with smallest payroll.

(5) Find those companies whose employees earn a higher salary and works in First Bank Corporation.

(3) Define first normal and second normal forms. Also derive BCNF on the basis of these first and second normal forms with proper example.

4. Answer the following : (Any **four**) **20**

(1) Write a short note on Transaction state.

(2) Write a short note on Concurrent Executions.

(3) Explain two phase locking protocol.

(4) Explain validation based protocol.

(5) Explain Multiversion timestamp ordering.

5. Answer following : (Any **four**) **20**

(1) How to recover database from deadlock ?

(2) Write a short note on stable storage implementation.

(3) In a log-based recovery, how to create checkpoints ? Explain with the help of suitable example.

(4) Consider 2nd example of Que.3, Write the steps to create database in access 2010.

(5) How to insert data in access 2010 ? Explain using valid example.

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