SE/Com/Sem IV

2-12-10

Con. 5511-10.

Database managment system

GT–6474

(3 Hours)

[Total Marks : 100

N. B. : (1) Question No. 1 is **compulsory**.
(2) Attempt any **four** questions out of remaining **six** questions.
(3) Make **suitable** assumptions if **needed**.

1. (a) Draw the E-R diagram for banking enterprise (State assumptions clearly). Convert E-R diagram into tables. 10
   (b) What is transaction ? Discuss state transition diagram and properties of transaction. 10

2. (a) Given the following relational schema.
   Division (div # , div-name, director)
   Department (dept # , dept-name, location, div #)
   Employee (emp#, emp-name, salary, address, dept #)
   State the following queries in SQL :
   (i) Get the employee name, dept-name and division name for all employees whose salary is above 20,000/- 3
   (ii) List the name of all employees who work in "Marketing" division. 3
   (iii) List the dept-name and employee names in that dept, for all department whose location is "Mumbai". 4
   (b) Explain following relational algebra operators with suitable example :— 10
   (i) Cartesian product
   (ii) Outer join
   (iii) Generalized Projection
   (iv) Set difference
   (v) Rename

3. (a) Give the advantages of DBMS over file system. 10
   (b) (i) What is the condition for a lossless decomposition of a relation ? Give example. 5
   (ii) Explain the terms total participation and partial participation with example. 5

4. (a) Define serializability. Explain conflict and view serializability. 10
   (b) What do you understand by deadlocks in database system ? Explain how it is prevented. 10

5. (a) Companies manufacture ranges of products which are purchased by customers. The relational schema for this operation is given as :— 12
   COMPANY (Company-code, Company-name, Director#, Director-name, { product-name, cost, { cust#, customer-name, address}}) where { } represents a repeating groups.
   (i) State the definitions of first, second and third normal forms.
   (ii) Normalize the above relation to third normal form.
   (b) Explain DDI, DML, TCL, DCL with example. 8

6. (a) Explain 2 phase locking protocol. 10
   (b) Explain following terms with example. 10
   (i) Simple and composite attributes
   (ii) Aggregation
   (iii) Ternery Relationship
   (iv) Weak entity set.

7. Write short notes on (any **four**) :— 20

(a) Hashing
(b) B^+ tree
(c) Triggers
(d) Views
(e) Shadow Paging.
