5E5044

B. Tech. V Semester (Main) Examination, Dec.. 2014
ELECTRICAL ENGINEERING # 5EE4A   rtuonline.com
Database Management System

Time : 3 Hours   Min. Passing Marks : 24   Maximum Marks : 80

Instruction to Candidates :

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.)

Unit-I

1. (a) Define database and DBMS. How database approach is better than the traditional file approach? Explain [8]

   (b) Design an ERD for Airlines Reservation System consisting of flights, aircrafts, airports, fares, reservation, tickets, pilots, crew and passengers. Clearly highlight the primary keys and mapping cardinalities. [8]

OR

1. (a) Explain the components of DBMS. Also draw a neat diagram of the DBMS architecture. [8]

   (b) Differentiate between the following :   [4×2=8]
   (i) Ternary Relationship and Aggregation
   (ii) Specialization and Generalization
   (iii) Super, Candidate and Primary keys
   (iv) Entity Sets, Attributes and Relationship Sets.

Unit-II

2. (a) What is normalization? Explain its need. Define various normal forms with example. [8]

   (b) Consider the following relations schemas: [4×2=8]
   Shop (Shop-No, Sh-name. Sh-address)
   Shop owner (Name, adders)
   Owns-shop (Name, Shop no)
   Customer (C-Name, C-address)
   requires (C-Name, item)
   has-stock (shop no, item)
   supplies (Shop-no, C-Name, Item, price)
   Write down the following queries in relational algebra–
   (i) Find the name of shop owners who supply some items to address 134,
   Mahatma Gandhi Road.
   (ii) Find the names of customers who have been supplied items of maximum total value.
   (iii) Find the name of customers who require the items which have not been supplied. List both the customers and the items.
   (iv) Find the names of customers who are supplied all their required items from a particular shop.

OR

2. (a) Give formal Definitions of TRC and DRC. What is meant by safety of expressions? [8]

   (b) Consider the following relation schema-   [4×2=8]
   Employee (person-name, street, city)
   Works (person-name, Company-name, salary)
   Company (company-name, city)
   Manager (person-name, manager-name)
   Write the following queries in Relational Algebra-
   (i) Find the names of all employees who work for "First Bank"
   (ii) Find the names of all employees who live in the same city as the company for which they work.
   (iii) Find the names of all employees who live in the same city and on the same city as do their managers.
   (iv) Find the name of all employees who don't work for "Small Bank".

Unit-III

3. (a) Explain Embedded SQL and its need. How is it different from Dynamics SQL? [8]

   (b) Define a trigger. What are the uses of creating triggers? Explain with examples. [8]

OR

3. (a) Explain the following clauses of SQL-   [4×2=8]
   (i) ORDER BY
   (ii) GROUP BY
   (iii) HAVING
   (iv) EXCEPT

   (b) What is a view? How can a view be used to implement database security? Explain with examples. [8]

Unit-IV

4. (a) What is Hashing? Explain its implementation by explaining one Hashing Technique. [8]

   (b) What are various types of Indexes? Explain with examples. [8]

OR

4. (a) Explain a B+ Tree node structure. Create a B+ Tree of order 3 having the following key values 105, 210, 350, 781, 50, 79, 73, 97, 500, 61, 100, 102, 49, 48. [8]

   (b) Explain the node structure of B Tree. What are the differences between B and B+ Tree indexes? Explain. [8]

Unit-V

5. (a) Define a Transaction. What are the properties of a Transaction? Explain various Transaction States with a neat diagram. [8]

   (b) What is a Deadlock? Explain various techniques of handling deadlocks. [8]

OR

5. (a) Define serializability. What are its various types? Explain. [8]

   (b) What all types of failures can occur in database systems? Explain various log based recovery techniques in detail. [8]