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B.Tech.(CSE) (2011 Onwards) (Sem.–5)
# RELATIONAL DATABASE MANAGEMENT SYSTEM–I
Subject Code : BTCS-502
Paper ID : [A2098]

Time : 3 Hrs.   Max. Marks : 60

INSTRUCTION TO CANDIDATES :
1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION- A

1) **Write briefly :**

   1) What is Two Phase Commit Protocol?

   2) How are static embedded SQL different from dynamic embedded SQL?

   3) What are the basic components of a Query Processor?

   4) What is a predefined exception?

   5) What is the scope of a variable in PL/SQL?

   6) What is an outer join?

   7) What are the journal files?

   8) What is a candidate key?

   9) What is Distributed Queries?

   10) What is Indexing?

SECTION-B

2) A bank has a client-server database for account withdrawal. What are the concurrency related problems that may occur? How can these problems be resolved?

3) What are the various advantages of Data bases Vs file system? Explain with example.

4) What is a host language? Why is it needed? What is the purpose of dynamic embedded SQL? Explain with the help of an example.

5) "*Practically, one must decompose the tables only till 3NF as it is loss less, dependency preserving decomposition.*" Comment on the above statement. Give example in support of your answer. How is 3NF different from BCNF?

6) Explain the architecture of DBMS, using a diagram.

SECTION-C

7) A department store consists of many item sections. A section is in charge. The store has three kinds of employees : accounts and billing; administrators; section maintainers. A request for purchase of items for the store is initiated by accounts and billing department which has the inventory details. Purchases are made by administration with proper quality checks from specified vendors. The section maintainers update the inventory placed at shelf's. Draw the E-R diagram for the store specifying aggregation, generalization or specialization hierarchy, if any.

8) Consider the following relational database : EMPLOYEE (emp name, street, city) WORKS (emp-name, comp-name, salary) COMPANY (comp name, city) MANAGES (emp_name, manager name)

For each of the following queries, give the relational algebraic expression and relational calculus expression :

i) Find the names of all the employees who work for XYZ Bank Corporation.

ii) Find the names of those employees who earn more than every employee of the XYZ Bank Corporation.

iii) Find the names of managers who work in a bank located in Delhi.

9) Assuming that A, B and C are the primary keys to relations R1, R2 and R3 respectively and all the relations are stored on their primary keys, find the total number of block transfers needed for the join operation. Please note the following :

Size of R1 = 1000 tuples   Size of R2 = 2000 tuples   Size of R3 = 3000 tuples Records per block for R1, R2 and R3 : 100 records/block. Total number of memory buffers available = 10 nos.