B. Tech Degree V Semester (Supplementary) Examination July 2010

IT/CS 505 DATABASE MANAGEMENT SYSTEMS

(2006 Scheme)

Time : 3 Hours Maximum Marks : 100

PART A

(Answer ***ALL*** questions)
(All questions carry ***EQUAL*** marks)

(8 x 5 = 40)

I. (a) Define weak-entity type. Explain its features and draw the symbol used in ER diagram.
(b) Differentiate between generalization and specialization.
(c) Differentiate between spanned and unspanned records.
(d) Differentiate between closed and open hashing. Discuss the relative merits of each technique in database application.
(e) Explain four types of join operations.
(f) Write down Amstrong's inference rules. What do you mean by saying that "These rules are complete and sound"?
(g) Explain ACID properties of transaction.
(h) Describe shadow paging recovery techniques with necessary diagram.

PART B

(4 x 15 = 60)

II. (a) Draw the three tier architecture of a Database management system and explain the functions of each blocks. (8)
(b) List the main functions of database administrator and explain. (7)

OR

III. (a) Define data independence. Explain the terms logical data independence and physical data independence. (5)
(b) Construct an ER diagram for a banking scenario. Assume in a city there are multiple banks and each bank has many branches, each branch has multiple customers and customers have various types of accounts. Some customers also had taken different types of loans from these bank branches, one customer can have multiple accounts and loans. (10)

IV. Differentiate between static and dynamic external hashing techniques. Explain the various hashing techniques used in both categories with necessary diagrams. (15)

OR

V. Differentiate between Primary, secondary and clustering indexes. Explain primary and clustering indexes with necessary diagrams. (15)

VI. (a) Write SQL and relational algebra queries for the following :

Loan (branch-name, loan-no, amount)
Borrower (customer-name, loan number)
Account (account-no, branch-name, balance)
Depositor (customer-name, account-no)

(i) find all loan numbers for loans with an amount greater than $1500
(ii) find the name of all customers who have loan from the 'Perryridge, Branch and find the loan amount. (8)

(b) Explain four characteristics of relations. (7)

OR

VII. Define normalization. 1NF, 2NF,3NF and BCNF with examples. (15)

VIII. Explain three locking techniques for concurrency control with necessary algorithms. (15)

OR

IX. (a) Write down the various steps in Building Data Warehouse. (7)
(b) Define Data mining and explain goals of data mining. (8)

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