B.Tech Degree V Semester Special Supplementary Examination June 2012

CS/IT 505 DATABASE MANAGEMENT SYSTEMS

(2006 Scheme)

Time: 3 Hours Maximum Marks: 100

PART A

(Answer *ALL* questions)

(8 × 5 = 40)

I. (a) What is meant by data independence? State its importance in database technology.

(b) Explain the following:
- (i) Participation constraint
- (ii) Cardinality
- (iii) Composite key

(c) List out advantages and disadvantages of variable length records and fixed length records.

(d) Why is a B^+ tree a better structure than a B-tree for implementation of an index sequential file? Discuss.

(e) Explain Entity Integrity and Referential Integrity.

(f) State and prove Armstrong inference rule.

(g) Discuss on shadow paging.

(h) What are the different features of object oriented database?

PART B

II. Construct an E-R diagram for a hospital with a set of patients and a set of medical doctors. Associate with each patient, a log of various tests and examination conducted. Construct the appropriate tables for this ER diagram and list the tables with their attributes, primary key and foreign key. (15)

OR

III. (a) Explain the difference between a weak and a strong entity set. Why do we have the concept of weak entity set? (5)

(b) Discuss on the following EER model concepts (i) specialization (ii) generalization (iii) superclass and subclass entity types. (10)

IV. (a) Differentiate between: (8)
- (i) spanned Vs unspanned records
- (ii) Heap file Vs sorted file

(b) What is multilevel indexing? How does multilevel indexing improve the efficiency of searching? (7)

OR

V. (a) Explain the different hashing techniques. What do you mean by collision resolution in hashing techniques? (8)

(b) Explain the insertion and deletion of nodes in B-tree with an example. (7)

(P.T.O.)

VI. (a) With suitable example explain the difference between natural join, outer join and Cartesian product operators in relational algebra. (10)

(b) Consider the following employee database and give SQL expressions for each of the following queries. (5)

Employee (Employee-name, street, city)
Works (Employee-name, Company-name, salary)
Company (Company-name, city)

(i) Find the names and cities of residence of all employees work for First Bank Corporation.

(ii) Find the names, street and cities of residence of all employees who work for First Bank Corporation.

OR

VII. (a) Describe the concept of functional dependencies with an example. When will it be trivial? (5)

(b) With an example explain 1NF, 2NF and 3NF. (10)

VIII. (a) Discuss the time stamp ordering protocol for concurrency control. (7)

(b) Explain the two phase commit protocol for the database. (8)

OR

IX. Write short notes: (15)

(i) Active database
(ii) Data mining
(iii) Data ware house

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