F 3062 (Pages : 2) Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, DECEMBER 2012

Fifth Semester

Branch : Computer Science and Engineering / Information Technology

CS 010 503/IT 010 506—DATABASE MANAGEMENT SYSTEMS (CS, IT)

(Regular—New Scheme)

Time : Three Hours Maximum : 100 Marks

Part A

Answer **all** *questions.*
Each question carries 3 *marks.*

1. Differentiate database schemes and instances.
2. How the outer join operations differ from inner join operations ?
3. Distinguish between dense and sparse indices.
4. Describe the concept of partial functional dependency and explain how the concept is used to define second normal form.
5. Define lock. What are the two modes of locking ?

(5 × 3 = 15 marks)

Part B

Answer **all** *questions.*
Each question carries 5 *marks.*

6. Explain the concept of weak entity with an example. Define the terms owner entity type, weak entity type, identifying relationship and partial key.
7. Explain referential integrity constraint and its importance.
8. Explain assertions and triggers in ORACLE.
9. Explain the various update anomalies that can arise in a relational database with examples.
10. Explain the concept of shadow paging.

(5 × 5 = 25 marks)

Part C

Answer **either** *(a) or (b) from each question.*
Each full question carries 12 *marks.*

11. (a) Explain the main characteristics of the database approach and how it differs from traditional file systems.

Or

(b) Explain the three-schema architecture of DBMS. What is data independence and why is it important ?

12. (a) Consider the following relation schema for the SALES database :

CUSTOMER (Cust No, CName, City)

ORDER (Order No, Order Date, Cust No, Amount)

ORDER–ITEM (Order No, Item No, Quantity)

ITEM (Item No, Unit Price)

Write the following queries in Relational Algebra.

(i) Retrieve the number and date of orders placed by customers residing at "Chennai".

(ii) Retrieve the number and unit price of items for which an order of quantity greater than 50 is placed.

(iii) Retrieve the order number, date and item number for the order of items having a unit price greater than 20.

(iv) Retrieve details of customers who have placed an order for the item number I 021.

Or

(b) Explain the following SQL commands with examples.

(i) INSERT. (ii) UPDATE.

(iii) DELETE. (iv) ALTER TABLE.

13. (a) What are hashing functions ? Explain the commonly used hash functions.

Or

(b) Explain the different types of single-level indices.

14. (a) Consider two sets of functional dependencies :

$F_1 = \{A \rightarrow C, AC \rightarrow D, E \rightarrow AD, E \rightarrow H\}$ and

$F_2 = \{A \rightarrow CD, E \rightarrow AH\}$. Are they equivalent ?

Or

(b) What is normalisation ? Explain INF, 2NF, 3NF and BCNF with examples.

15. (a) Highlight the need for concurrency control with detailed examples.

Or

(b) Explain ARIES algorithm in detail.

(5 × 12 = 60 marks)

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Part C

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Or