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Question Paper Code : 21383

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2015.

Fourth Semester

Computer Science and Engineering

CS 2255/CS 46/CS 1254/080250009/10144 CS 406 — DATABASE MANAGEMENT SYSTEMS

(Common to Information Technology)

(Regulations 2008/2010)

(Common to PTCS 2255/10144 CS 406 – Database Management Systems for B.E. (Part-Time) Third Semester — Computer Science and Engineering, Regulations 2009/2010)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define atomicity in transaction management.

2. Give an example for one to one and one to many relationship.

3. What is meant by referential integrity?

4. Which operators are called as unary operators and explain why they are called so?

5. Define trivial functional dependency.

6. What is meant by referential integrity?

7. Define deadlock.

8. What is meant by serializability?

9. Mention the different hashing techniques.

10. When is it preferable to use a dense index rather than a sparse index? Justify your answer.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Discuss the functions of database administrator in brief. (6)

(ii) Explain the architecture of a database system. (10)

Or

(b) (i) Describe the various database languages. (8)

(ii) Draw an E-R diagram corresponding to customers and loans. (8)

12. (a) Consider the following relational database

Employee (Employee — Name, Street, City)

Works (Employee — Name, Company-Name, Salary)

Company (Company-Name, City)

Manager (Employee-Name, Manager-Name)

Give an SQL DDL definition of this database. Identify referential integrity constrains that should hold, and include them in the DDL definition. (16)

Or

(b) Consider the following relation

Employee (Employee-Name, Company-Name, Salary)

Write SQL for the following :

(i) Find the total salary of each company

(ii) Find the employee name who is getting lowest salary

(iii) Find the company name which has lowest average salary

(iv) Find the employee name whose salary is higher than average salary of TCS. (4 × 4 = 16)

13. (a) Explain 1NF, 2NF, 3NF and BCNF with suitable examples. (16)

Or

(b) Describe the multi-valued dependencies and fourth normal form with suitable example. (16)

14. (a) (i) Explain the different locking mechanism used in lock based concurrency control and also explain how to implement the locking mechanism. (10)

(ii) Explain validation based protocol with an example. (6)

Or

(b) (i) Explain the difference between conflict serializability and view serializability with an example. (10)

(ii) How to test serializability? (6)

15. (a) (i) Explain the difference between hash indexes and B^+-tree indexes. In particular, discuss how equality and range searches work, using an example.

(ii) Explain the structure of B^+ tree. How to process queries B^+ tree. (10)

Or

(b) Explain the different levels of RAID. Discuss the factors to be considered in choosing a RAID level. (16)
