Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 73381

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2017.

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
BE. (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.   What is physical, logical and view level data abstraction?

2.   What do you mean by simple and composite attribute?

3.   Define a super key.

4.   What is a trigger?

5.   Give an example of a relation schema R and a set of dependencies such that
     R is in BCNF, but not in 4NF.

6.   Why are certain functional dependencies called as trivial functional
     dependencies?

7.   List ACID properties.

8.   Define two phase locking.

9.   What is a rigorous two phase locking protocol?

10. What is a heap file?

PART B — (5 × 16 = 80 marks)

11. (a) Explain the purpose of database system.

Or

(b) Write about the structure of database system architecture with block diagram.

12. (a) Briefly explain about fundamental, additional operations in relational algebra with example.

Or

(b) Consider the database schema

Emp(emp-name, type, birthday, set of(Exam-names) set of (Skills))

Children(emp-name, ch-name, birthday)

Skills (type, set of (exam-names))

Exams(exam-name, year, city)

Write SQL statements for the following queries. -

(i) Find the names of all employees who have a birthday in March as their children.

(ii) Find those employees who took an examination for the skill type typing" in the city "Chennai".

(iii) List all exam names under specific skill type for the given employee other than his exam names.

(iv) Find the names of the city and year where the examination is-going to held for the given skill type. (16)

13. (a) Explain Boyce Codd Normal form and Fourth Normal forms with suitable example. (16)

Or

(b) Explain first, second and third normal forms with suitable example. (16)

14. (a) (i) Define and differentiate between Deadlock prevention Deadlock Detection, Deadlock avoidance. (6)

(ii) Explain different locking mechanism used in lock based concurrency control. (10)

Or

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(b)   (i)   What are deferred modification and immediate modification technique for recovery? How does recovery takes place in case of a failure in these techniques?

        (ii)   Explain time stamp based concurrency control with and without Thomas write rule. Give example.   (8 + 8)

15.   (a)   Construct a B+ tree to insert the following key elements 5, 3, 4, 9, 7, 15, 14, 21, 22, 23 and explain.

Or

     (b)   Describe in detail about how records are represented in a file and how to organize them in a file.

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