

Reg. No. :

Question Paper Code : 71383

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2015.

Fourth Semester

Computer Science and Engineering

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

(Common to Information Technology)

(Regulation 2008/2010)

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

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is the difference between the strong entity set and weak entity set?
2. What is the role of Database Administrator?
3. What are various Data types in SQL?
4. Give example of following relationships : Many-to-One and One-to-One.
5. What is the need for normalisation?
6. Define Third normal form.
7. What is the need for concurrency?
8. Write the use of save points.
9. What is the need for RAID?
10. Write the four properties of B tree.



PART B — (5 × 16 = 80 marks)

11. (a) Explain the purpose of database system. (16)

Or

- (b) Consider ternary relationship exist between Employee, his Skillset and the Project assigned to him. How will you break it into binary relationship? Assume your own attributes and give the ER diagram for both the binary and ternary form of relationship for the above scenario. (16)

12. (a) Express in SQL queries. (4 × 4 = 16)

Consider relations

Country (name, continent, population, GDP, life-expectancy)

River (name, origin, length)

City (name, country, population)

GDP and population in million

- (i) Find all countries whose GDP is greater than \$500 billion but less than \$1 trillion.
- (ii) List the life expectancy in countries that have river originating in them.
- (iii) Find all cities that are either in South America or whose population is less than 2 million.
- (iv) List all cities which are not in South America.

Or

- (b) Express in SQL queries. (4 × 4 = 16)

EMPLOYEE (EMP_NAME, MANAGER_NAME)

Works (ename, department_name, salary)

- (i) Find all employees working under ragu.
- (ii) Find the department name which is having highest number of Employees.
- (iii) Find the employee who is getting lowest salary.
- (iv) Find all employees who is getting higher than average salary of sales department.

13. (a) Normalize the following relation.

Employee (Emp_name, Skills, Birth_date, Department_name, Department_manager). (16)

Or

- (b) (i) Compute the closure of the following set of functional dependencies AB->C, C->D, D->A for the relation R = (A,B,C,D). Also list the candidate key for R. (6)
- (ii) Normalize the relation Student (regno, name, branch_code, branch_name, semester, sub1_mark, sub2_mark, sub3_mark, total, result, CGPA, attendance%). (10)

14. (a) (i) Explain ACID properties. (8)
(ii) Discuss about Two phase commit protocol. (8)

Or

- (b) (i) Describe SQL facilities for Recovery and concurrency. (8)
(ii) Explain two phase locking protocol with an example. (8)
15. (a) Construct B+ tree to insert the following numbers (order of the tree is 3)
3,2,5,7,6,23,24,35,67,44,43,42,17,18,19. (16)

Or

- (b) Suppose that we are using extendible hashing on a file that contains records with the following search key values:
3,5,7,11,17,19,23,29,31
Show the extendible hash structure for this file if the hash function is $h(x) = x \text{ mod } 8$ and bucket can holds three records. (16)

