

**B.E./B.Tech. DEGREE EXAMINATIONS, MAY/JUNE 2010.**  
**FOURTH SEMESTER COMPUTER SCIENCE AND ENGINEERING**

**DATA BASE MANAGEMENT SYSTEMS**  
**(Common to Information Technology)**  
**(REGULATIONS 2008)**

**Time: Three hours Maximum: 100 marks**

**Answer ALL questions PART A — (10 x 2 = 20 marks)**

1. Differentiate File systems and Database management system.
2. What is logical data independence?
3. Write the Tuple relational calculus expression to find the number of employees working in Sales department in the given relation Employee.Employee (SSN-No, Name, Department)
4. Define triggers.
5. When is a functional dependency said to be trivial?
6. What are the pitfalls of Database design?
7. What are ACID properties?
8. What are the facilities available in SQL for Database recovery?
9. What is stripping and mirroring?
10. Differentiate static and dynamic hashing.

**PART B — (5 x 16 = 80 marks)**

11. (a) (i) Explain the Database Management System architecture with a neat diagram. (10)  
(ii) What are the need for the development of relational databases? (6)  
Or  
(b) Draw the ER-diagram to design a system for a Publishing Company that produces scientific books on various subjects. The books are written by authors who specialize in one particular subject. The company employs editors who not necessarily being specialists in a particular area, each take sole responsibility for editing one or more publications.  
A publication covers essentially one of the specialist subjects and is normally written by a single author. When writing a particular book, each author works with editor, but may submit another work for publication to be supervised by other editors. To improve their competitiveness, the company tries to employ a variety of authors, more than one author being a specialist in a particular subject.
12. (a) (i) Explain briefly about various relational algebra expressions with examples. (8)  
(ii) Discuss about the evolution of distributed database. Compare with client/server mode. (8)  
Or  
(b) Consider the relational table given below and answer the following SQL queries. Employee(SSN-No, Name, Department, Salary)  
(i) List all the employees whose name starts with the letter 'L'.

- (ii) Find the maximum salary given to employees in each department.
- (iii) Find the number of employees working in 'accounts' department.
- (iv) Find the second maximum salary from the table.
- (v) Find the employee who is getting the minimum salary.

13. (a) What is normalization? Explain first, second and third normal forms with an example describing the advantages of normalization.

Or

(b) Explain briefly about Armstrong rules on functional dependency and write the algorithm to compute functional dependency closure.

14. (a) Explain briefly about the working of two phase locking protocol using a sample transaction.

Or

(b) (i) When is a transaction said to be deadlocked? Explain the deadlock prevention methods with an example. (8)

(ii) Explain concurrency control mechanisms.

Discuss the need with example. (8)

15. (a) (i) Draw and explain the structure of B+ tree index files. (10)

(ii) Write notes on RAID. (6)

Or

(b)(i) Explain briefly about query processing with examples to perform sort and join operation. (10)

(ii) Discuss the approaches of database tuning. (6)

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