

**H 1355**

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2006.

Fourth Semester

Information Technology

IF 254 — DATABASE MANAGEMENT SYSTEM

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define the term data-independence.
2. Summarize the ER model notations.
3. What is a natural join?
4. What is the difference between 3NF and BCNF?
5. List out the SQL statements associated with a database transaction.
6. Name the fragmentations supported in a distributed database system and write an example for each.
7. Write the significance of network database model.
8. What types of enhancements are made in RDBMS to support multimedia elements?
9. What is an association rule? Explain with an example.
10. What are the advantages of using semi structured data models over conventional models?

PART B — (5 × 16 = 80 marks)

11. (i) Design an ER schema for the database application given below.  
An instructor offers many courses during a particular semester. Each instructor has a name and ID. Similarly each course has a course name and course number. Each semester is distinguished by a semester number and a period (year). Students can register for five courses in a semester. Some course may have a prerequisite. Draw an ER diagram and identify the schema. (8)
- (ii) Write in detail any crash recovery algorithm and explain its features. (8)

12. (a) (i) Compare file system and database system. (8)
- (ii) Draw the architecture of a DBMS and explain its features. (8)

Or

- (b) (i) What is a three-layered architecture in DBMS? Explain the responsibilities of each layer. (8)
- (ii) Define the terms integrity constraint, weak entity and cardinality ratio. (8)
13. (a) (i) List out the relational algebra operations and explain its role in DBMS. (8)
- (ii) What is a view? How is it created? Write the syntax. (4)
- (iii) What are aggregate functions? (4)

Or

- (b) Consider the following relational tables.

emp (eid, salary, designation, deptno); ..

dept (deptno, dname, mgrid);

dept\_location (dno, dlocation);

project (pname, pnumber, dnum)

Employee table refers department table for department number. Department table refers employee table for manager id. Department location table refers dept. for dno. project table also refers dept. table for valid dept. number.

Write SQL queries for the following :

- (i) List all the department names where number of employees are more than 50. (4)
- (ii) List all the project names that are handled by a specific department and a specific manager. (4)
- (iii) List out the departments where there is no manager. (4)

Write SQL statements for creating tables and inserting values. (4)

(8) 14. (a) (i) What are the steps involved in query processing? How is the execution of a query optimized? (8)

(8) (ii) What are concurrent transactions? How are they handled in DBMS? (8)

Or

(8) (b) (i) What are the indexing mechanisms used in DBMS? Explain. (8)

(8) (ii) What is a deductive database system? What are the application areas in which it is used? (8)

(8) 15. (a) (i) What is a data warehouse? How is a data ware housing system designed? Explain with an example. (10)

(4) (ii) Highlight the features of object oriented databases. (6)

Or

(4) (b) (i) Name the data mining techniques available and highlight their features. (8)

(4) (ii) What is a temporal database system? (4)

(4) (iii) Highlight the features of active databases. (4)

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