

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 2472

Roll No.

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B. Tech.

(SEM. VI) THEORY EXAMINATION 2010-11
**DATABASE MANAGEMENT SYSTEM, DATA
MINING AND WAREHOUSING**

Time : 3 Hours

Total Marks : 100

Note :— (1) Attempt all questions.

(2) All questions carry equal marks.

1. Attempt any **four** parts of the following :— (5×4=20)

- (a) Write and describe need of database management system.
- (b) Define and differentiate various DBMS languages.
- (c) Describe role of database administrator, database designer and end users.
- (d) What do you mean by database catalogue ? Discuss the information available in database catalogue.
- (e) What is data independence ? Explain important types of data independence. What is the importance of data independence ?
- (f) Explain main components of database management system.

2. Attempt any two parts of the following :— (10×2=20)

(a) Consider the following relational schemas :

Supplier(supplier_id, supplier_name, supplier_address) .

Parts (parts_id, parts_name, color)

Catalog (supplier_id, parts_id, cost)

Write the relational algebra operations to find the following information :

- (i) Find name and address of supplier who supply yellow and blue parts.
 - (ii) Find the supplier name and color of parts having cost Rs. 20,000 or more.
 - (iii) Find the supplier_ids who supply a red part that cost of less than Rs. 10,000 and a black part that cost is greater than Rs. 15,000.
- (b) (i) Write and explain basic types of relational algebra operations.
- (ii) What is constraint ? Briefly explain domain, key, integrity and referential integrity constraints.
- (c) Consider the following relational database, where the primary keys are underlined :
- Employee(person_name, street, city)
- Works(person_name, company_name, salary)
- Company(company_name, city)
- Manages(person_name, manager_name)

Give SQL command to execute following queries :

- (i) Find the name of all employees who live in the same city and on the same street as do their managers.
- (ii) Find the name of all employees in this database who do not work for "First Bank Corporation".
- (iii) Find the name of all employees who earn more than every of "Small Bank Corporation".
- (iv) Give all managers in this database a 10 percent salary raise.

3. Attempt any two parts of the following :— (10×2=20)

- (a) (i) Discuss impact of insertion, deletion and modification anomalies in database design.
- (ii) What is multivalued dependency ? What type constraint does this specify ?
- (b) What is functional dependency ? Explain the six Armstrong's inference rule. How few among of them are complete and sound ?

(c) (i) Consider the following relation and set of FDs :

LOTS(property_id, county_name, lot#, area, price, tax_rate)

F = {FD1 : property_id → county_name, lot#, area, price, tax_rate, FD2 : county_name, lot# → property_id, area, price, tax_rate, FD3 : county_name → tax_rate, FD4 : area → price}

Decompose the above relation upto 3rd normal form.

(ii) Define Boyce-Codd normal forms. How does it differ from third normal form ?

4. Attempt any **two** parts of the following :— (10×2=20)

(a) Describe popular types of parallel processor system. Explain the evolution of distributed database from parallel processing system.

(b) Draw architecture of data warehouse and explain its essential components in brief.

(c) What is client server computing model ? Describe essential types of client server computing models. Describe the application areas of each type.

5. Attempt any **two** parts of the following :— (10×2=20)

(a) What is data mining ? Describe important implementation issues associated with data mining.

(b) (i) What is data cleaning ? Explain essential types of data cleaning.

(ii) Describe data transformation tools in brief.

(c) Describe data warehouse of building process. Explain the issues involved in data warehouse building process.