

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

PAPER ID : 2472

Roll No.

--	--	--	--	--	--	--	--	--	--

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.