

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

PAPER ID : 0203

Roll No.

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B. Tech.

(SEM. VII) ODD SEMESTER THEORY
EXAMINATION 2010-11

**DATABASE MANAGEMENT SYSTEM, DATA MINING
AND WAREHOUSING**

Time : 3 Hours

Total Marks : 100

Note : Attempt all questions.

1. Attempt any **four** parts of the following : **(5×4=20)**
 - (a) Describe the advantages of implementing database management system in an organization.
 - (b) Describe the concept of data independence and explain its importance in database environment.
 - (c) Draw and describe the three tier architecture of database management system.
 - (d) Describe the basic roll of database administrator.
 - (e) Describe the database schema, database instance and database state.
 - (f) Describe the main categories of data model.
2. Attempt any **two** parts of the following : **(10×2=20)**
 - (a) What do you understand by E R Diagram ? Assume any system having at least four entities. Assume suitable

attributes and then draw an E R diagram for same and explain the various relationships used.

(b) Consider the following schema :

SUPPLIERS (sid : integer, sname : string, address : string)

PARTS (pid : integer, pname : string, color : string)

CATALOG (sid : integer, pid : integer, cost : real)

The primary key fields are underlined, and the domain of each field is listed after the field name.

Write the following queries in relational algebra expressions :

- (i) Find the names of suppliers who supply some red part.
 - (ii) Find the sids of suppliers who supply some red or green part.
 - (iii) Find the sids of suppliers who supply some red part and some green part.
 - (iv) Find the sids of suppliers who supply every part.
 - (v) Find the sids of suppliers who supply every red part.
- (c) (i) Describe the domain calculus and tuple calculus.
- (ii) Describe the triggers and assertions. How are these different from normal SQL queries ? Explain.

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

- (a) What do you understand by functional dependency and functional dependency preservation ? Write and explain the Armstrong (inference) axioms.

- (b) Consider the given relation $R(X, Y, W, Z, P, Q)$ and the set of functional dependencies $F = \{XY \rightarrow W, XW \rightarrow P, PQ \rightarrow Z, XY \rightarrow Q\}$, the relation R has been decomposed into $R_1(Z, P, Q)$, $R_2(X, Y, Z, P, Q)$. Determine whether the decomposition is lossless or lossy? Use the lossless join algorithm.
- (c) Describe the multivalued dependencies. Define the fourth normal form with suitable example.

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

- (a) Describe the functions and architecture of client server computing model.
- (b) (i) Define and describe the data warehouse.
(ii) Explain the parallel computing system in brief.
- (c) Describe the data extraction and cleanup process.

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

- (a) What are the different components of data warehouse? Explain the tasks and phases involved in data warehousing.
- (b) Describe the important types of multiprocessor architecture. Explain the mapping between data warehouse and multiprocessor architecture.
- (c) What is the data cube? Explain the nature of data cube and the operations performed on it.