

(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.

3. 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 R1(Z,P,Q), R2(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.

4. 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.

5. 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.