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

PAPER ID : 1068 Roll No. | | | | | | | | | | |

B. Tech.

(SEM. IV) THEORY EXAMINATION 2010-11

DATABASE MANAGEMENT SYSTEM

Time : 3 Hours *Total Marks : 100*

Note :—Attempt ALL questions.

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

(a) What is data independence ? What are the differences between logical data independence and physical data independence ?

(b) What are main differences between file processing system and database management system ?

(c) Define the following terms :

(i) DDL

(ii) DML

(iii) Database schema

(iv) Data redundancy

(v) Data models.

(d) What do you mean by data abstraction ? Explain the difference between physical level, conceptual level and view level of data abstraction.

(e) What is the difference between Specialization and Generalization with respect to database ?

(f) Draw the E-R diagram of the registration process of the student in a particular course. Convert the E-R diagram into tables also.

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

(a) (i) Discuss various anomalies associated with relational database management system by giving suitable example.

(ii) What do you mean by Referential Integrity ? Define Foreign key and discuss the concept behind declaration of foreign keys.

(b) What is the concept behind Theta join ? Consider the Employee and Works tables and answer the following :

Employee

Employee name	Street	City
Marry	Toon	Hollywood
John	Tunnel	Carrotville
Smith	Revolver	Death valley
William	Seaview	Seattle

Works

Employee–name	Branch–name	Salary
Marry	Mesa	1500
John	Mesa	1300
Gates	Redmond	5300
William	Redmond	1500

(i) Show the result of natural join between employee and works.

(ii) Show the result of left outer joint between Employee and Works.

(iii) Show the result of right outer join between Employee and Works.

(iv) Show the result of full outer join between Employee and Works.

(c) Consider the following three relation schema :—

Supplier(S_ID, SNAME, SCITY, TURNOVER)

Product(P_ID, WEIGHT, COLOR, COST, SELLING_PRICE)

Quantity(S_ID, P_ID, QTY)

Answer the following SQL queries :

(a) Get all the details of supplier who operate from KANPUR with TURNOVER = 500.

(b) Get the names of supplier whose name begins with R.

(c) Get the names of supplier who supply part no. 7.

(d) Get part nos. weighting between 10 and 30.

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

(a) (i) Given a relation R(A, B, C, D, E) and a set F{ABk C, ABk D, DHk A, BCk E}. Is this relation in BCNF ? If not decompose the relation R into BCNF.

(ii) Discuss the PJNF with suitable example.

(b) Consider the following schema R = {A, B, C, G, H, I}. Let F be a set of FDs F = {AkB, AkC, CGkH, CGkI, BkH}, answer the following :

(i) Calculate the closure of F.

(ii) List the candidate keys for R.

(c) (i) Let R(A, B, C, G, H, I) with the following set of dependencies D given :

A7B, B7HI, CGkH—List the nontrivial dependencies in D+.

(ii) Define and explain the functional dependency with a suitable example.

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

(a) What is Log ? How is it maintained ? Discuss the salient feature of Deferred database modification and Immediate database modification strategies in brief.

(b) (i) What are the blind writes ? Explain it with suitable example. "Blind writes appear in any view serializable schedule that is not conflict serializable" is this statement correct ? If yes then give the reason.

(ii) Discuss the view serializable schedule with suitable example.

(c) What do you mean by deadlock prevention and deadlock avoidance ? Discuss the wait-die and wound-wait scheme of deadlock prevention.

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

(a) Write short notes on the following :

(i) Time stamp based protocol

(ii) Validation based protocol.

(b) Discuss the Multi version schemes of concurrrency control. Explain it with suitable example. Also describe the recovery with concurrent transaction.

(c) Write short notes on :—

(i) Multiple Granularity

(ii) ACID properties of transaction.