Total No. of Questions : 12]

SEAT No. :

P2358

[Total No. of Pages :5

[4758] - 99
T.E. (I.T.)
DATABASE MANAGEMENT SYSTEMS
(2008 Course) (Semester - I)

Time : 3 Hours] *[Max. Marks : 100*

Instructions to the candidates:

1) ***Answers to the two sections should be written in separate answer books.***
2) ***Answer any three questions from each section.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right side indicate full marks.***
5) ***Use of Calculator is allowed.***
6) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) What is layered architecture of DBMS systems? How does it achieve logical, Physical independence? **[8]**

b) Consider a database of car insurance company whose customers own one or more cars each. Each car has associated with it zero or any number of recorded accidents. That database should provide following details to the users **[10]**

i) identify all entities

ii) identify all relationships

iii) ER diagram

iv) Relational model

OR

Q2) a) It is said that file systems lack of data independence. Give your comments? **[2]**

b) Explain the functions of database administrator. **[6]**

P.T.O.

c) What is need by mapping cardinality? For a binary relationship set what are the possible mapping cardinalities? Explain with diagrams. **[6]**

d) Consider the following database: **[4]**

Emp (emp _name, street, city)

Works (emp _name, Company_name, Salary)

Company (Company_name, city)

Manager(emp_name, manager_name)

Draw an ER diagram for above database.

Q3) a) Explain with example the concept of trigger and assertion. **[8]**

b) Consider the relational database given below **[8]**

Employee (emp _name, street, city)

Work (emp_name, company_name, salary)

Company (company _name, city)

manager (emp_name, manager_name)

Give all expressions in SQL for each of the following:

i) Find those companies whose employee earns a higher salary, on all average than the average salary at ABC Ltd.

ii) Find all the employees who lives in the city and on the same street as do the manager.

iii) Find the names of employees who do not work for ABC Ltd.

iv) Find the company with the most employees.

OR

Q4) a) Consider the following Relations **[8]**

Person (Id_no, Name, Street, City, Bldgrp, Rh)

donated(id_no, donate_date)

Write Sql statement each of the following.

i) Get names and address of persons with blood group 'B' Rh-'Ve' who have donated blood more than once.

ii) Get number of persons with blood group AB Rh'+Ve'.

b) Write short note on. **[8]**

i) Stored procedures and triggers.

ii) Dynamic and embedded SQL.

Q5) a) What is normalization? Explain difference between 2NF and 3NF with suitable example? **[8]**

b) Describe the concept of transitive dependency and explain how this concept is used to define 3NF. **[8]**

OR

Q6) a) State and prove Armstrong Axioms for functional dependencies? **[8]**

b) When two sets of functional dependencies are said to be equivalent? **[4]**

Given:

F = {A--->C, AC--->D, E--->AD, E--->H}

G = {A-->CD, E--->AH}

Check if F and G are equivalent.

c) Write Short note on Lossless Decomposition? **[4]**

SECTION - II

Q7) a) Construct a B+ Tree for following set of key values (2,3,5,7,11,17,19,23,29,31) Assume order to be 4. **[6]**

b) Explain Query Optimization. **[6]**

c) Describe in brief dynamic hashing/extensible hashing? **[4]**

OR

Q8) a) Describe structure of B+ tree. How does it differ from B-tree. How do implement dynamic multilevel indexes. **[8]**

b) Explain different database system architecture? **[8]**

Q9) a) Explain time-stamp based and lock based protocols? **[6]**

b) When do deadlocks happen, how to prevent them and how to recover if deadlock takes place? **[8]**

c) Check whether given schedule is view serializable. **[4]**

T1	T2	T3
Read(Q)		
	Write (Q)	
Write (Q)		
		Write (Q)

OR

Q10)a) Define serializability. Give test for conflict serializability check whether following schedule is conflict serializable. **[8]**

T1	T2
Read (A)	
Write (A)	
	Read (A)
	Write (B)
Read (A)	
Write (A)	
	Read (B)

b) What is Recoverable schedule? Why is it desirable? **[6]**

c) Explain how deadlock detection and prevention is done? **[4]**

Q11)a) Explain how a persistent pointer is implemented. Compare this implementation with that of Pointers as they exist in general purpose language such as 'C'. **[8]**

b) Explain why ambiguity potentially exist with multiple inheritance, illustrate with example. **[8]**

OR

Q12)Write a short notes on: (any 4). **[16]**

a) Distributed database system.

b) Persistent programming language.

c) Centralized and client server architecture.

d) Need of Backup and replication

e) Data warehouses.

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