[Total No. of Questions: 09]   [Total No. of Pages: 2]

Uni. Roll No. ……………

Program: B.Tech
Semester: 6/ (2018)

Name of Subject: Advanced Database Management Systems
Subject Code: PECS-114

Paper ID: 17194

Time Allowed: 02 Hours   **Max. Marks: 60**

NOTE:

1) Each question is of 10 marks.
2) Attempt any six questions out of nine
3) Any missing data may be assumed appropriately

Q1. (a) Create a function that will accept CUST_ID and check whether the customer already exists in the CUST_MASTER table or not. If the customer exits, display 'Yes! The customer exists." else display an error message stating "The customer doesn't exist".

(b) Drop the function in (a)

(c) Create a package named ***myCustomer*** that holds the function created above in (a). Write the package specification and package body for this package.

(d) Write an Update Trigger on CUST_MASTER table. The system keeps track of the updates and record the old values in the CUST_OLD_VALUES table.   (3+1+3+3)

Q2. (a) The two-phase locking ensures conflict serializability but the problem of cascading rollback and deadlock is still present. Analyse the statement by giving examples and suggest more strict measures to overcome these problems.

(b) Given the schedule of transactions below where TS specifies the timestamp of every transaction:

T1 (TS-- 100)	T2 (TS-- 200)	T3 (TS-- 300)
Read(A)		

Page 1 of 3

	Read(B)	
Write(C)		
		Read(B)
Read(C)		
	Write(B)	
		Write(A)

Apply timestamp ordering protocol to find out which transaction would be rolled back and identify the type of conflict that causes rollback of the identified transactions. (5+5)

Q3. (a) Examine algorithms for SELECT operations with an example. (5+5)

(b) Consider the following SQL query that finds all applicants who want to major in ROBOTICS, live in INDIA, and go to a school ranked better than 10 (i.e., rank < 10).

Relation	Cardinality	Number of pages
Applicants (id, name, city, sid)	2,000	100
Schools (sid, sname, srank)	100	10
Major (id, major)	3000	200

SELECT A.name FROM Applicants A, Schools S, Major M WHERE A.sid = S.sid AND A.id = M.id AND A.city = 'INDIA' AND S.rank < 10 AND M.major = 'ROBOTICS'

Assume:

• Each school has a unique rank number (srank value) between 1 and 100.

• There are 20 different cities.

• Applicants.sid is a foreign key that references Schools.sid.

• Major.id is a foreign key that references Applicants.id.

• There is an unclustered, secondary B+ tree index on Major.id and all index pages are in memory.

Apply Heuristic Query Optimization and calculate the cost of the query tree obtained.

Q4. Elaborate how the mapping of objects created in object oriented programming language to a relational database is a tedious task by giving appropriate examples. Also, illustrate various OODBMS methods to implement object-oriented features.

Q5. Compare the primary site method with the primary copy method for distributed. concurrency control. How does the use of backup sites affect each? Also, explain the mechanism of election and voting in DDBMS.

Q6. Demonstrate various considerations along with various steps that needs to be taken while designing and constructing a data warehouse.

Q7. 'Data Mining has proven to be substantial for financial analysis in organisations'. Justify this statement.

Q8. Enumerate various disadvantages of traditional databases as compared to multimedia databases. How is data handled in such systems?

Q9. 'Fragmentation and Data Allocation are considered crucial while designing a DDBMS'. Justify the statement highlighting various concepts and issues.

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