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S.Y. B.Sc. (Sem. I) EXAMINATION, 2018

COMPUTER SCIENCE

Paper II

(CS-212 : Relational Database Management System)

(2013 PATTERN)

Time : Two Hours **Maximum Marks : 40**

N.B. :— (*i*) *All* questions are compulsory.

(*ii*) *All* questions carry equal marks.

(*iii*) Figures to the right indicate full marks.

1. Attempt all of the following : [10×1=10]

(*i*) Define transitive functional dependency.

(*ii*) State difference between varchar and text data type of postgresQL.

(*iii*) What is view ?

(*iv*) Define term Trigger.

(*v*) Define term Serial Schedule.

(*vi*) What is time stamp ?

(*vii*) Define system log.

(*viii*) Define cascading rollback.

(*ix*) Define term Cursor.

(*x*) State purpose of commit statement.

P.T.O.

2. Attempt any *two* of the following : [2×5=10]

(*i*) What is transaction ? Explain ACID property of transaction.

(*ii*) Explain client-server Architecture.

(*iii*) Write a short note on Mandatory Access Control method.

3. Attempt any *two* of the following : [2×5=10]

(*i*) The following is a list of events in an interleaved execution of set of transaction T_1, T_2, T_3, T_4, T_5 with two phase locking protocol :

Time	Transaction	Code
t_1	T_1	Lock (A, X)
t_2	T_2	Lock (B, X)
t_3	T_3	Lock (E, S)
t_4	T_4	Lock (B, X)
t_5	T_5	Lock (A, X)
t_6	T_4	Lock (A, X)
t_7	T_1	Lock (B, X)
t_8	T_5	Lock (D, X)
t_9	T_3	Lock (A, S)
t_{10}	T_2	Lock (D, X)

(*ii*) The following is log entries at time of system crash :

[Start – Transaction, T_1]

[Write, T_1, A, 40]

[Start – Transaction, T_2]

[Write, T_2, B, 80]

[Start – Transaction, T_3]

[Write, T_3, C, 100]

[Commit, T_2]

[Commit, T_1]

[Checkpoint]

[Start-transaction, T_4]

[Write, T_4, A, 200]

[Write, T_3, E, 10] → System Crash.

If immediate update with checkpoint is used, what will be the recovery procedure ?

(*iii*) Consider the following non-serial schedule :

T_1	T_2	T_3
Read (A)		
	Write (A)	
Write (A)		Write (A)

Is this schedule conflict serializable ?

Is this schedule view serializable ?

Justify your answer.

If it is serializable, give its equivalent serial schedule.

4. Attempt either A *or* B :

(A) (*i*) Write a short note on Thomas Write Rule. [5]

(*ii*) What is stored procedure ? Give syntax to create stored procedure. [2]

(*iii*) Consider the following entities and relationships [3]

Student (rollno, name, address, class)

Subject (code, subjectName, teacherName)

Stud-sub (rollno, code, marks)

Define a trigger before insert for every row as a student, subject table, whenever marks entered is < 0 or > 100, Raise an application error and display corresponding message.

Or

(B) (*i*) Explain timestamp based protocol. [5]

(*ii*) What is Trigger ? Explain with syntax. [2]

(*iii*) Consider the following relational database : [3]

Doctor (dno, dname, dcity)

Hospital (hno, hname, hcity)

doc-hosp (dno, hno)

Write a function to return count of number of hospitals located in 'Ahmednagar' City.