Total No. of Questions—**4**] [Total No. of Printed Pages—**4**

Seat No.	

[5116]-102

S.Y. B.Sc. (First Semester) EXAMINATION, 2017

COMPUTER SCIENCE

[CS-212 Relational Database Management System (RDBMS)]

(2013 PATTERN)

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

N.B. **:—** (*i*) Figures to the right indicate full marks.

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

(*iii*) Assume suitable data, if necessary.

(*iv*) *All* questions are compulsory

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

(*a*) List any *two* Armstrong's axioms.

(*b*) State the different levels of security.

(*c*) Define authorization matrix.

(*d*) Draw the state diagram of transaction.

(*e*) Define the term polyinstantiation.

(*f*) What is lost update problem ?

(*g*) What do you mean by trigger ?

(*h*) Write purpose and syntax of raise statement.

(*i*) What is locking ?

(*j*) Give any *two* advantages of two-tire architecture.

P.T.O.

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

(*a*) Explain wait-die and wound-wait deadlock prevnetion scheme.

(*b*) Explain role of DBA with respect to security.

(*c*) Explain desirable properties of decomposition.

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

(*a*) Explain client-server architecture benefits.

(*b*) Consider the following relation schema :

student(sno, sname)

teacher (tno, tname, qualification)

Student and teacher are related with many-many relationship. Write a cursor to list details of students who have taken RDBMS as a subject.

(*c*) The following is a list of events in an interleaved execution of set of transctions T1, T2, T3, T4 with two phase locking protocol :

Time	**Transaction**	**Code**
t1	T1	LOCK(A, S)
t2	T2	LOCK(B, X)
t3	T3	LOCK(C, X)
t4	T4	LOCK(A, S)

t5	T1	LOCK(C, X)
t6	T2	LOCK(A, S)
t7	T3	LOCK(D, X)
t8	T4	LOCK(B, S)

Construct wait for graph according to above request. Is there deadlock at any instance ? Justify.

4. Attempt (A) *or* (B) : [1×10=10]

(A) (*a*) Differentiate between discretionary and mandatory access control method. [5]

(*b*) Discuss how the recovery from catastrophic failure is handled. [3]

(*c*) Explain referential integrity. [2]

Or

(B) (*a*) The following are log entries at the time of system crash : [5]

[Start-transaction, T1]

[Read-item, T1, D]

[Write-item, T1, D, B]

[Commit, T1]

[Checkpoint]

[Start-transaction, T2]

[Read-item, T2, B]

[Write-item, T2, B, 12]

[Start-transaction, T3]

[Write-item, T3, A, 20]

[Read-item, T3, D]

[Write-item, T3, D, 20] ← system crash.

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

(*b*) Explain time-stamp based protocol with read-write conflciting conditions. [3]

(*c*) Explain concatenation of strings in PQ/SQL. [2]