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[5263]-301

B.C.A./B.B.A. (CA) (III Sem.) EXAMINATION, 2017

**301 : RELATIONAL DATABASE MANAGEMENT SYSTEM (RDBMS)
(2013 PATTERN)**

Time : Three Hours

Maximum Marks : 80

- N.B. :—** (i) *All questions are compulsory.*
(ii) *All questions carry equal marks.*
(iii) *Draw a neat labelled diagram if necessary.*

1. Solve the following : [8×2=16]

- (a) What is cascadeless schedule ?
- (b) List the state of Transaction.
- (c) What is RDBMS ? Enlist any *two* product of RDBMS.
- (d) What is PL/SQL ? List the data types of PL/SQL.
- (e) List and define basic operations used to recover from failure.
- (f) What is block ? List its types.
- (g) What is deadlock ?
- (h) What is trigger ? List the types of trigger.

2. Solve the following (any *four*) : [4×4=16]

- (a) What are the features of oracle ?

P.T.O.

- (b) What is cursor ? Explain various attributes of cursor with example.
- (c) What is transaction ? Explain properties of transaction.
- (d) What are the problems in concurrent execution of transaction ?
- (e) Write a short note on checkpoint.

3. Solve the following (any *four*) : [4×4=16]

- (a) Write a short note on storage types.
- (b) Explain, how deadlock is recovered.
- (c) What is serializability ? Explain conflict serializability with example.
- (d) What is exception handling ? Explain user defined exception with example.
- (e) Explain Validation Based Protocol.

4. Solve the following (any *four*) : [4×4=16]

- (a) Consider the following Relational Database :

Customer(Cust_no, Cust_name, Cust_city)

Account(Acc_no, Acc_type, balance, Cust_no)

Write a procedure which will take balance as a parameter and will display customer name having account balance greater than or equal to given balance.

- (b) Consider the following relationship :

Publisher(P_no, P_name, P_add)

Book(book_no, book_name, price, P_no)

Write a function which will return total no. of books having price greater than 300.

- (c) Consider the following Relational Database :

Party(partycode, partyname)

Politician(pno, pname, description, partycode)

Write a cursor which will display partywise details of politician.

- (d) Consider the following Relational Database :

University(u_no, u_name, city)

College(c_no, c_name, city, establish_yr, u_no)

Write a trigger that restricts insertion of college record having year of establishment greater than current year.

- (e) Write a package, which will consist of one function and one procedure.

Consider Relation :

Researcher(rno, rname, rcity)

Write a function which will return total no. of researcher from 'PUNE' city.

Write a procedure which will display details of given researcher.

5. Solve the following (any *four*) :

[4×4=16]

(a) Consider the following transaction :

T₁	T₂
Read (Z)	Read (X)
$Z = Z * 10$	Read (Z)
Write (Z)	$X = X + Z$
Read (Y)	Write (X)
Read (Z)	
$Y = Y + Z$	
Write (Y)	

Give *two* Non-Serial Schedules that are serializable.

(b) Consider the following transactions :

T₁	T₂
Read (A)	Read (B)
$A = A * 5$	$B = B * 5$
Write (A)	Write (B)
Read (B)	Read (A)
Read (C)	$A = A * 10$
$B = B * 10$	Write (A)
Write (B)	
$C = C * 5$	
Write (C)	

Give *two* Non-Serial Schedules that are serializable.

- (c) The following is the list of events in an inter-leaved execution of set T_1 , T_2 , T_3 and T_4 assuming 2PL. Is there a deadlock ? If yes. Which transactions are involved in deadlock ?

Time	Transaction	Code
t_1	T_1	Lock (A, X)
t_2	T_2	Lock (B, S)
t_3	T_3	Lock (A, S)
t_4	T_4	Lock (C, S)
t_5	T_1	Lock (B, S)
t_6	T_2	Lock (C, X)
t_7	T_3	Lock (D, X)
t_8	T_4	Lock (D, S)

- (d) The following is the list of Events in an inter-leaved execution of set T_1 , T_2 , T_3 and T_4 assuming 2PL. Is there a deadlock ? If yes, which transactions are involved in deadlock ?

Time	Transaction	Code
t_1	T_1	Lock (L, X)
t_2	T_2	Lock (M, X)
t_3	T_3	Lock (N, S)
t_4	T_4	Lock (L, S)
t_5	T_1	Lock (N, X)
t_6	T_3	Lock (L, S)
t_7	T_2	Lock (O, X)
t_8	T_4	Lock (M, S)

- (e) The following are the Log entries as the time of system crash :

[Start Transaction, T_1]

[Write_item, T_1 , C, 200]

[Commit T_1]

[Checkpoint]

[Start_transaction, T_2]

[Write_item, T_2 , D, 100]

[Commit, T_2]

[Start Transaction, T_3]

[Write_item, T_3 , D, 150]

[Write_item, T_3 , C, 250] \leftarrow System Crash

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