Total No. of Questions—5] [Total No. of Printed Pages—6

Seat No.	

[5363]-301

B.C.A/B.B.A. (CA) (III Semester) EXAMINATION, 2018

301 : RELATIONAL DATABASE MANAGEMENT SYSTEM (RDBMS)

(2013 PATTERN)

Time : Three Hours **Maximum Marks : 80**

N.B. :— (*i*) Neat diagrams must be drawn wherever necessary.

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

(*iii*) All questions carry equal marks.

(*iv*) All questions are compulsory.

1. Attempt all : [8×2=16]

(*a*) What is PL/SQL ? List the sections of a PL/SQL block.

(*b*) What is RDBMS ? List any *four* characteristics of RDBMS.

(*c*) Define :

(*i*) Upgrading

(*ii*) Downgrading.

(*d*) What is Schedule ? List the types of Schedule.

(*e*) What is procedure in PL/SQL ? Give syntax of procedure.

P.T.O.

(*f*) Define :

(*i*) Redo

(*ii*) Undo.

(*g*) What are the different types of storage ? Gvie example.

(*h*) Define :

(*i*) Logical error

(*ii*) System error.

2. Attempt any *four* : [4×4=16]

(*a*) Explain advantages and disadvantages of RDBMS.

(*b*) What is cursor ? Explain various attributes of cursor.

(*c*) Explain recoverable schedule and cascadeless schedule with example.

(*d*) What is Deadlock ? Explain how deadlock is hundled.

(*e*) Explain immediate database modification technique in detail with example.

3. Attempt any *four* : [4×4=16]

(*a*) What is transaction ? Explain the states of transaction with the help of diagram.

(*b*) What is Log ? Explain log-based recovery.

(*c*) Write a note on package in PL/SQL.

(*d*) Explain two-phase locking protocol with example.

(*e*) Explain remote backup system with the help of diagram.

4. Attempt any *four* : [4×4=16]

(*a*) Consider the following relational database company (cno, cname, ccity, cshare_value)

Person (Pno, Pname, Pcity, Pph.no)

Company-person (Cno, Pno, no-of-shares).

Write a function which will return total number of companies from given city.

(*b*) Condider the following relational detabase :

Employee (eno, ename, city, deptname)

Project (pno, pname, status)

Emp–proj (eno, pno, no-of-days)

Write a trigger that restricts insertion or updation of records having no-of-days less than zero.

(*c*) Consider the following relational database customer (cno, cname, ccity, mob-no.)

Loan (lno, loan-amt, no-of-years, cno).

Write a cursor to display details of customer and their loan who have token loan for more than 10 years.

(*d*) Consider the following relational database :

Patient (Pno, Pname, Paddr)

Doctor (Dno, Dname, Daddr, city)

Patient-Doctor (Pno, Dno, disease, no-of-visits)

Write a procedure which will display doctor details who is treating the diabetes patient.

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

Write a procedure which will display first n numbers using for loop.

Write a function which will return cube of a given number.

5. Attempt any *four* : [4×4=16]

(*a*) Consider the following transactions. Find out two non-serial schedules that are serializable :

T_1	T_2
Read (P)	Read (Q)
P = P * 10	Q = Q + 10
Write (P)	Write (Q)
Read (Q)	Read (R)
Q = Q/10	R = R * 10
Write (Q)	Write (R)

(*b*) Consider the following transactions. Find out two non-serial schedules that are serializable :

T_1	T_2
Read (x)	Read (x)
$x = x + 1000$	$x = x - 1000$
Write (x)	Write (x)
Read (y)	Read (y)
Read (z)	$y = y - 2000$

$y = y + 2000$	Write (y)
Write (y)	
$z = z + 3000$	
Write (z)	

(*c*) The following is the list representing the sequence of events in an interleaved execution of set T_1, T_2, T_3 and T_4 assuming two-phase locking protocol.

Is there a deadlock ? If yes, which transactions are involved in deadlock ?

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

(*d*) The following is the list representing the sequence of events in an interleaved execution of set T_1, T_2, T_3 and T_4 assuming two-phase locking protocol. 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 (C,X)
t_6	T_2	Lock (B,X)
t_7	T_3	Lock (D,X)
t_8	T_4	Lock (D,S)

(*e*) The following are the log entries at the time of system crash :

[Start-Transaction, T_1]

[Write-item, T_1, X, 2000]

[Commits, T_1]

[Check point]

[Start-Transaction, T_4]

[Write-item, T_4, X, 3000]

[Write-item, T_4, Y, 2000]

[Commit, T_4]

[Start-transaction, T_2]

[Write-item, T_2, Z, 2000]

[Start-transaction, T_3]

[Write-item, T_3, X, 3000] ← System crash

If deferred update technique with check point is used, what will be the recovery procedure ?