**Total No. of Questions : 8]**

**SEAT No. :** [ ]

**PD4101**

**[Total No. of Pages : 2**

# [6402]-61
# S.E. (Information Technology)
# DATABASE MANAGEMENT SYSTEM
# (2019 Pattern) (Semester - IV) (214452)

***Time : 2½ Hours]*** ***[Max. Marks : 70***

***Instructions to the candidates:***

1) ***Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6. Q.7 or Q.8.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data, if necessary.***

***Q1)*** a) What is view in SQL and how it is define? Discuss the problem that may arise when one attempt to update views. How views are typically updated? **[8]**

b) Write a note on Database modification using SQL. **[6]**

c) Differentiate between: WHERE and HAVING clauses in SQL. **[4]**

OR

***Q2)*** a) Describe the circumstances in which you would choose to use embedded SQL rather than using SQL alone or using only a general purpose programming language. Compare dynamic and embedded SQL with suitable example. **[8]**

b) With suitable example explain SQL aggregate functions. **[6]**

c) Explain the concept of trigger with suitable example. **[4]**

***Q3)*** a) Define BCNF? How does it differ from 3NF? Why is it consider a stronger form of 3NF? **[7]**

b) Relation R (A,B,C,D,E) having following set of FD. Convert it to 3NF and also check whether it is in BCNF or not. **[6]**

$A \rightarrow BD,\ B \rightarrow C,\ D \rightarrow E$

c) Write a note on Measures of Query cost. **[4]**

OR

***Q4)*** a) Given a relation schema R = (A,B,C,D,E) and function dependency as $A \rightarrow C$, $C \rightarrow D$, $CE \rightarrow A$, $B \rightarrow C$, $DE \rightarrow C$. Relation R is decomposed into r1= AD, r2=AB, r3 = BE, r4 = CDE, r5=AE. Decide this decomposition is lossy or lossless ? Justify. **[6]**

b) Show that with suitable example: if a relation schema is in BCNF, then it is also in 3NF. **[6]**

c) Write a note on evaluation of expression. **[5]**

***P.T.O.***

***Q5)*** a) Give test for conflict serializability. Check whether following schedule is conflict serializable. **[6]**

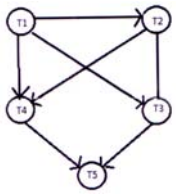
| T1 | T2 |
|---|---|
| Read(A) | |
| Write(A) | |
| | Read(A) |
| | Write(A) |
| Read(B) | |
| Write(B) | |
| | Read(B) |
| | Write(B) |

b) Explain the concept of transaction. Describe ACID properties for transaction. **[6]**

c) Discuss the problem with concurrency. Describe any two method based on locks to control concurrency. **[6]**

OR

***Q6)*** a) Differentiate between conflict and view serializability. Given precedence graph, is the corresponding schedule conflict serializable. **[6]**




b) When do deadlock happen, how to prevent them and how to recover if deadlock takes place? **[6]**

c) Explain deferred database modification and immediate database modification and their differences in the context of recovery. **[6]**

***Q7)*** a) State which database system architecture you will prefer for following application. **[6]**

i) Railway reservation system
ii) Search Engine
iii) College admission system

b) Draw and explain architecture of parallel Databases. **[6]**

c) What are the characteristics of NoSQL cloud databases. **[5]**

OR

***Q8)*** a) What is fragment of a relation? What are the main type of fragmentation? Why is fragmentation a useful context in distributed database design. **[6]**

b) Explain centralize and client server database architecture. **[6]**

c) What are the requirement of mobile databases? List existing mobile databases. **[5]**

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