



Time Allotted : 3 Hours

CS/B.TECH(N)/EVEN/SEM-6/6590/2024-2025/I018

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Paper Code : PEC-IT601B Distributed Systems

UPID : 006590

Full Marks : 70

The Figures in the margin indicate full marks.

Candidate are required to give their answers in their own words as far as practicable

**Group-A (Very Short Answer Type Question)**

1. Answer any ten of the following :

[ 1 x 10 = 10 ]

- (i) The node where the distributed transaction originates is called the .....
- (ii) What is the advantage of a DDBMS?
- (iii) What is view management in distributed database design?
- (iv) What are the factors that govern query optimization?
- (v) What are distributed concurrency control algorithms?
- (vi) What is shared-memory architecture?
- (vii) What is the purpose of mobile database replication?
- (viii) ..... protocol is used to perform multiple transactions that execute on different database.
- (ix) What is fragmentation in distributed database design?
- (x) What are the goals of transaction management?
- (xi) What are the parallel architectures used in parallel database systems?
- (xii) What is distributed object management?

**Group-B (Short Answer Type Question)**

Answer any three of the following :

[ 5 x 3 = 15 ]

2. What is concurrency control? What is lock based protocol? [5]
3. 1) What is distributed transparency? Explain different levels of distributed transparency (level 1, level 2, level 3) with a diagram. [5]
4. Write short note on mobile database. [5]
5. What are the advantage and disadvantage of replication? What is auxiliary program? [5]
6. Write short note on MDBS architecture. [5]

**Group-C (Long Answer Type Question)**

Answer any three of the following :

[ 15 x 3 = 45 ]

7. (a) Discuss various transaction model, [5]  
(b) What is flat and nested transaction? Explain with example. [5]  
(c) What is serializability in distributed database? [5]
8. (a) Why is it necessary to have a commit protocol? [5]  
(b) Explain how does two phase commit protocol respond to failure of a participating site. [5]  
(c) What are the disadvantages of 2 phase commit protocol? [5]
9. (a) Explain different parallel database architecture. [7]  
(b) What is the goal of using parallel database architecture. [4]  
(c) Difference between parallel database and distributed database. [4]
10. (a) What is serializability in distributed database? [5]  
(b) Write down the algorithms both Coordinator and Participants of 2PC protocol in distributed environment. [5]  
(c) Explain with diagram communication structure for different 2PC protocol. [5]
11. (a) Discuss multidatabase architecture. [5]  
(b) What is mobile database? [5]  
(c) Discuss in brief concurrency control mechanism in distributed DBMS. [5]