Code No.: DS743PE   R20   H.T.No. [ ][ ][8][R][ ][ ][ ][ ][ ]

CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
IV–B.TECH–I–Semester End Examinations (Supply) – April – 2025
DISTRIBUTED DATABASES
(CSD)

[Time: 3 Hours]   [Max. Marks: 70]

Note: This question paper contains two parts A and B.

   Part A is compulsory which carries 20 marks. Answer all questions in Part A.

   Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART-A   (20 Marks)

1. a) What is data allocation in the context of DDBMS? [2M]
   b) List the major problems in DDBMS. [2M]
   c) What is the purpose of data localization in query processing? [2M]
   d) What is query decomposition? [2M]
   e) List the four properties of a transaction. [2M]
   f) Identify two types of transactions commonly used in database systems. [2M]
   g) Define the terms: Reliability and Availability. [2M]
   h) Why fault tolerance is important in distributed systems? [2M]
   i) List two key features of the Object-Oriented Data Model (OODM) [2M]
   j) Define an object in the context of object-oriented databases. [2M]

PART-B   (50 Marks)

2. a) Discuss the design issues of Distribute Databases. [5M]
   b) Explain the challenges in distributed systems. [5M]

OR

3. Demonstrate how data fragmentation can improve performance in distributed databases with suitable example. [10M]

4. a) Compare and contrast the steps involved in centralized vs. distributed query optimization. [5M]
   b) Analyze the factors that influence the choice of algorithms in distributed query optimization. [5M]

OR

5. Illustrate generic layering scheme for query processing in DDBMS with diagram and explain the functions of each layer. [10M]

6. Analyze the impact of deadlock on distributed transaction processing and explain how deadlock detection mechanisms work. [10M]

OR

7. a) Discuss in detail about the types of the transaction models. [5M]
   b) Illustrate the algorithm for basic Time Stamp Ordering algorithm. [5M]

8. Examine the impact of site failures on data consistency and availability in a distributed database. [10M]

OR

9. Analyze the challenges of load balancing in a parallel database system and suggest possible solutions. [10M]

10. Demonstrate with a scenario where object query processing would be essential in a distributed system. [10M]

OR

11. Apply the concept of persistence in an object-oriented database, showing how it allows objects to maintain state. [10M]

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