

Code No.: CS741PE

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**CMR ENGINEERING COLLEGE: : HYDERABAD**  
**UGC AUTONOMOUS**  
**IV-B.TECH-I-Semester End Examinations (Regular) - November- 2024**  
**DISTRIBUTED SYSTEMS**  
**(CSE)**

[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 a distributed system? [2M]
- b) What challenges are associated with distributed systems? [2M]
- c) What is invocation in distributed systems? [2M]
- d) Difference between process and thread? [2M]
- e) Explain a Peer-to-Peer (P2P) system? [2M]
- f) List out characteristics of P2P middleware? [2M]
- g) What is an atomic commit protocol? [2M]
- h) What is transaction recovery, and why is it important? [2M]
- i) What are fault-tolerant services, and why are they important? [2M]
- j) How do transactions operate with replicated data? [2M]

**PART-B**

**(50 Marks)**

2. Explain the characteristics of distributed systems with suitable examples. [10M]
- OR**
3. Describe Java RMI (Remote Method Invocation) with a suitable case study or example. [10M]
  4. Describe the structure and working of a Distributed File System (DFS). Provide a relevant example. [10M]
- OR**
5. What are invocation mechanisms in distributed systems, and how do they work? Provide an example. [10M]
  6. Discuss the challenges associated with logical clocks and how they contribute to maintaining global states in distributed systems. [10M]
- OR**
7. Explain the election algorithms used in distributed systems and their significance in achieving coordination among processes. [10M]
  8. Discuss the ACID properties of transactions and their importance in ensuring database reliability. [10M]
- OR**
9. Explain the structure and advantages of flat and nested distributed transactions. How do they impact transaction management? [10M]
  10. Discuss the importance of replication in distributed systems and the trade-offs involved in implementing it. [10M]
- OR**
11. Discuss the importance of consistency models in distributed systems and how they affect application behavior. [10M]

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