

**Adikavi Nannaya University, Rajahmundry**  
**MCA IV Semester**  
**MCA-19405 Elective-I: 1. Distributed Systems**  
**Model Question Paper**

**Time: 3 Hours**

**Max. Marks: 75**

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**SECTION – A (4X15=60 Marks)**  
**Answer ALL Questions**

1. a) What are Distributed Systems? Give some examples. Explain the advantages and limitations of distributed systems. 15M  

**Or**

- b) Explain the various issues to be addressed while designing a distributed system 15M
- 2. a) Explain and compare the mutual exclusion algorithms 15M  

**Or**

- b) What are physical and logical clocks? Explain the various clock synchronization algorithms. 15M
- 3. a) Compare the different system models 7M  
b) What are threads? Explain the design issues for thread packages 8M  

**Or**

- c) Explain the different processor allocation algorithms 15M
- 4. a) Explain Strict Consistency, Sequential Consistency and Causal Consistency with appropriate examples. 15M  

**Or**

- b) Explain cache consistency protocols for bus based multiprocessors with shared memory 8M  
c) How can sequential consistency be achieved in replicated pages in page based distributed shared memory? 7M

**SECTION – B (5X3=15 Marks)**  
**Answer any FIVE Questions**

5. **Write a Short note on**
  - a) Differentiate tightly coupled and loosely coupled hardware.
  - b) What are the essential properties of transactions?
  - c) Explain Ring Election Algorithm.
  - d) Explain RPC semantics in the presence of any two types failures
  - e) Write briefly about file service interface.
  - f) What are faults? Explain the types of component faults and processor faults
  - g) Compare the various shared memory systems.
  - h) Explain PRAM consistency.