

Duration: 3 Hours

[Total Marks -80]

N.B. (i) **Q. No. 1** is compulsory

(ii) Attempt any **three** questions out of the remaining **five** questions

- 1 (a) What are the common issues with which the designer of a heterogeneous distributed system must deal? 05
- (b) State and prove Amdahl's Law to compute speedup of parallel computers. From experiment it was verified that 70% of execution time was spent on parallel execution. What is the maximum speedup that can be obtained with 16 processors? 05
- (c) Explain the concept of Processing Element in SIMD architecture. 05
- (d) Explain stream oriented communication with an example. 05
- 2 (a) Discuss Raymond's Tree based algorithm of token based distributed mutual exclusion. 10
- (b) How pipeline hazards are classified? Discuss data hazard in detail and list the techniques used to eliminate data hazard. 10
- 3 (a) Discuss and differentiate various client-centric consistency models. 10
- (b) Illustrate the parallel Algorithm for matrix multiplication and compare the performance of this algorithm with sequential matrix multiplication algorithm. 10
- 4 (a) Describe code migration issues in detail. 10
- (b) What is a logic clock? Why are logic clocks required in distributed systems? How does Lamport synchronize logical clocks? Which events are said to be concurrent in Lamport timestamps. 10
- 5 (a) What is the requirement of Election algorithm in Distributed Systems? Describe any one Election algorithm in detail with an example. 10
- (b) Define a Remote Procedure Call. Explain the working of RPC in detail 10
- 6 (a) Describe File-Caching schemes. 10
- (b) Differentiate between Job scheduling and load balancing. Discuss the issues in designing Load Balancing Algorithm. 10

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