

[6010]-40

B.E. (Computer Engineering) (Insem)
HIGH PERFORMANCE COMPUTING
(2019 Pattern) (Semester - VIII) (410250) (Theory)

Time : 1 Hour]

[Max. Marks : 30

Instructions to the candidates:

- 1) Answer Q.1 or Q.2, Q.3 or Q.4.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.
- 4) Assume suitable data, if necessary.

- Q1)** a) Explain with suitable diagram SIMD, MIMD architecture. [4]
- b) Explain the impact of Memory Latency & Memory Bandwidth on system performance. [6]
- c) Explain Message Passing Costs in Parallel Computers in parallel machines. [5]

OR

- Q2)** a) Describe Uniform-memory-access and Non-uniform-memory-access with diagrammatic representation. [6]
- b) Describe the scope of parallel computing. Give applications of parallel computing. [4]
- c) Write a short note on (Any Two) [5]
- i) Dataflow Models
 - ii) Demand Driven Computation
 - iii) Cache Memory

- ✓ Q3) a) Explain any three data decomposition techniques with examples. [6]
- b) Explain different characteristics of tasks. [4]
- c) Explain classification of Dynamic mapping techniques. [5]

centralized, distributed.

OR

- Q4) a) What are mapping techniques for load balancing? Explain at least two mapping techniques. [4]
- b) Explain any three parallel algorithm models with suitable examples. [6]
- c) Draw the task-dependency graph for finding the minimum number in the sequence {4, 9, 1, 7, 8, 11, 2, 12} where each node in the tree represents the task of finding the minimum of a pair of numbers. Compare this with serial version of finding minimum number from an array. [5]