

Total No. of Questions : 4]

SEAT No. :

PA-10170

[Total No. of Pages : 2

[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

P.T.O.

- 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]

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]
