

Total No. of Questions : 4]

**PA-10170**

SEAT No. :

[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]