

Total No. of Questions : 8]

P3422

SEAT No. :

[Total No. of Pages : 2

[5670]-698

**B.E. (Computer Engineering)**

**HIGH PERFORMANCE COMPUTING**

**(2015 Pattern) (Semester-I) (End Sem.) (410241)**

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Answer Four-questions Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.
- 2) Neat diagram must be drawn wherever necessary.
- 3) Figures to the right side indicate full marks.
- 4) Assume suitable data if necessary.
- 5) Justify your answer with an example wherever necessary.

**Q1)** a) Explain term of all-to-all broadcast on linear array, mesh & Hypercube topologies. [8]

b) Explain mapping techniques for local balancing. [6]

c) Explain N-wide superscalar architecture [6]

OR

**Q2)** a) Explain the methods for containing Interaction overheads. [8]

b) Write short note on circular shift on a mesh. [6]

c) List application of parallel programming [6]

**Q3)** a) Explain sources of overhead in parallel program. [8]

b) Explain the performance Metrics for parallel system. [8]

OR

**Q4)** a) Write a note on minimum & cost optimal execution time. [8]

b) Explain parallel Matrix-vector multiplication algorithm with example. [8]

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**Q5)** a) What are the issues in sorting on parallel computers with example? [8]

b) Modify DFS for parallel execution & analyze its complexing. [8]

OR

**Q6)** a) Explain dijkstra algorithm in parallel formulations [8]

b) Explain communication strategies for parallel BFS. [8]

**Q7)** a) Draw & explain CUDA architecture in detail [8]

b) List APIs for dealing with CUDA device memory. [5]

c) Explain different kinds of CUDA memory. [5]

OR

**Q8)** a) Explain how the CUDA-C program executes at kernel level with example. [8]

b) How synchronization manage in CUDA with example. [5]

c) Give five application of CUDA. [5]

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