Total No. of Questions :8]

SEAT No. :

P3422

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[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]**

P.T.O.

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

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

OR

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

b) Explain communicaion 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) Explai 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]**