Total No. of Questions : 8]

SEAT No. :

PD4589

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[6404]-94

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

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.***
2) ***Neat diagrams must be drawn wherever necessary.***

Q1) a) Explain Broadcast and Reduce operation with diagram. **[6]**

b) Explain Scatter and Gather operation. **[6]**

c) Write a short note on Circular shift on a mesh. **[5]**

OR

Q2) a) Explain prefix-sum operation for an eight-node hypercube. **[6]**

b) Explain All-to-One Broadcast and Reduction on a ring. **[6]**

c) Explain with example and algorithm all-to-all broadcast on 3 × 3 mesh. **[5]**

Q3) a) Explain performance matrices of parallel system. **[6]**

b) Explain Matrix – Matrix multiplication in details. **[6]**

c) Write a note on minimum and cost optimal execution time. **[5]**

OR

Q4) a) Write a short note on Matrix vector multiplication using: **[9]**

i) Row-wise 1D partitioning

ii) 2 D partitioning

iii) Comparison of 1D and 2D partitioning

b) Explain the Dense matrix algorithms. **[8]**

i) Matrix vector multiplication.

ii) Matrix-Matrix multiplication.

Q5) a) Explain CUDA architecture in details. **[9]**

b) Write a short note on: Managing GPU Memory. **[9]**

OR

P.T.O.

Q6) a) Modify DFS for parallel execution and analyze it's complexing. **[9]**

b) Explain Dijkstra's algorithm in parallel formulation. **[9]**

Q7) a) Write a short note on Parallel BFS. **[4]**

b) Explain the term: Communication strategies in BFS. **[5]**

c) Write a note on: **[9]**

i) Random Communication Strategy

ii) Ring Communication Strategy

iii) Blackboard Communication Strategy

OR

Q8) a) Explain odd-even transportation in bubble sort using suitable example. **[6]**

b) Write a short note on parallel formulation for CRCW PRAM. **[6]**

c) Explain Distributed Computing for Document Classification. **[6]**

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