Code: 13A05805

R13

B.Tech IV Year II Semester (R13) Advanced Supplementary Examinations July 2017
HIGH PERFORMANCE COMPUTING
(Common to CSE and IT)

Time: 3 hours
Max. Marks: 70

PART – A
(Compulsory Question)
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1   Answer the following: (10 X 02 = 20 Marks)
  (a) Write about VLIW processors.
  (b) Explain the need for parallel computing.
  (c) Write about the mapping techniques for load balancing.
  (d) Write about improving the speed of communication operators.
  (e) Write about the basic building blocks of message passing paradigm.
  (f) Explain the need for thread programming.
  (g) Write about the synchronization primitives in open MP.
  (h) Write about the difference between shared memory and distributed memory programming.
  (i) Write about the parallel quick sort.
  (j) Write about analysis of average speed up in parallel DFS.

PART – B
(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2   What are the major differences between message-passing and shared-address-space computers? Also
     outline the advantages and disadvantages of the two.

OR

3   Explain in detail about the interconnection networks used for parallel computers.

UNIT – II

4   Explain in detail about the techniques for dynamic mapping.

OR

5   Explain about all-to-all broadcast and reduction.

UNIT – III

6   Write a program to implement matrix multiplication using open MP primitives.

OR

7   Explain about synchronization primitives in pthreads.

UNIT – IV

8   Show that the block-based bitonic sort algorithm that uses compare-split operations is correct.

OR

9   Explain parallel implementation of Gaussian elimination method with 2-d partitioning.

UNIT – V

10   Explain the parallel depth-first search.

OR

11   Explain the parallel formulation of Dijkstra's single-source algorithm.

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