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B.Tech IV Year II Semester (R13) Advanced Supplementary Examinations July 2018 HIGH PERFORMANCE COMPUTING

(Common to CSE and IT)

Time: 3 hours

Max. Marks: 70

PART – A

(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
 - (a) Write about the scope of parallel computing.
 - (b) Write about prefetching.
 - (c) Write about scatter and gather operations.
 - (d) Write about the mapping techniques for load balancing.
 - (e) Write about MPI reduction operator.
 - (f) Explain the need for thread programming.
 - (g) Can bubble sort be parallelized? Explain.
 - (h) Write about Best First search algorithms.
 - (i) Define transitive closure of a graph.
 - (j) Write about Tree-Based termination detection.

PART – B

(Answer all five units, $5 \times 10 = 50$ Marks)

2 Explain trends in microprocessor architectures.

OR

3 Explain about communication costs in parallel machines.

UNIT – II

4 Write about methods for containing interaction overheads.

OR

5 Explain about All-to-All personalized communication.

UNIT – III

6 Write an MPI program to implement odd-even sort.

OR

7 Explain about composite synchronization constructs in Pthreads.

UNIT – IV

8 Explain about solving a system of linear equations.

OR

9 How to parallelize the sequential shell sort algorithm for a p-process hypercube.

UNIT – V

10 Describe and analyze the performance of a parallel formulation of Floyd's algorithm that uses 1-D block mapping and the pipelining technique.

OR

11 Write about sequential search algorithms.
