**Code: 13A05805** **R13**

B.Tech IV Year II Semester (R13) Regular & Supplementary Examinations April 2018

**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) What is bisection width?
(b) Explain the need for parallel computing.
(c) Write about scatter and gather operations.
(d) Write about improving the speed of communication operators.
(e) Write about MPI_ send( ) and MPI_ recv( ) functions.
(f) Write about condition variables in Pthreads.
(g) Write about external sorting.
(h) Can shell sort be parallelized? Explain.
(i) Define minimum spanning tree.
(j) Define 0/1 integer-linear-programming problem.

**PART – B**

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

**UNIT – I**

2 Explain dichotomy of parallel computing platforms.

**OR**

3 Explain in detail about achieving cache coherence in multiprocessor systems.

**UNIT – II**

4 Explain in detail about decomposition techniques.

**OR**

5 Write about improving the speed of communication operators.

**UNIT – III**

6 Write a program to implement matrix multiplication using Pthreads.

**OR**

7 Describe a message-transfer protocol for buffered sends and receives in which the buffering is performed only by the sending process. What kind of additional hardware support is needed to make these types of protocols practical?

**UNIT – IV**

8 Explain the DNS algorithm in detail.

**OR**

9 Explain parallel implementation of odd-even transposition sort on an n-process ring.

**UNIT – V**

10 Describe the algorithms for sparse graphs.

**OR**

11 Write about the anomalies in parallel search algorithms.

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