

B. TECH.**THEORY EXAMINATION (SEM–VI) 2016-17****PARALLEL ALGORITHM****Time : 3 Hours****Max. Marks : 100****Note : Be precise in your answer. In case of numerical problem assume data wherever not provided.****SECTION – A****1. Attempt all parts of the following question:****10 x 2 = 20**

- (a) What is Speed-up?
- (b) What is SIMD?
- (c) What is a hyper cube connection?
- (d) How long does Bitonic sorting require on PRAM?
- (e) How long does the parallel version of Prim's minimum spanning tree finding algorithm require on a graph with n nodes using p processors
- (f) What is task-throughput?
- (g) What is the complexity of prefix sum in pram model?
- (h) What is common CRCW PRAM?
- (i) What is data-parallel computation?
- (j) Difference between permutation and combination.

SECTION – B**2. Attempt any five of the following questions:****5 x 10 = 50**

- (a) Describe the Butterfly Model with suitable diagram
- (b) Explain PRAM Computational model. Along with brief explanation of EREW and CREW computational model.
- (c) What are the various performance measures of parallel algorithm? Discuss various performance measures with example.
- (d) Discuss Bitonic merge in detail with suitable example.
- (e) What do you mean by cost-optimality? Discuss any one cost optimal algorithm in detail.
- (f) Explain parallel Branch and Bound search?
- (g) Differentiate between the hypercube and Shuffle-Exchange network parallel computational model.
- (h) What do you mean by parallel sorting networks? Also discuss the enumeration sort algorithm?

SECTION – C**Attempt any two of the following questions:****2 x 15 = 30**

- 3 (i) What is Amdahl Effect? Explain. Also discuss Amdahl's Law.
(ii) Depth and Breadth first search algorithm for graph
- 4 Parallel Alpha Beta search.
- 5 What is data parallelism? Explain difference between Data Parallelism Vs Task Parallelism and Data Parallelism and Model Parallelism