

**IV/IV B.Tech. DEGREE EXAMINATIONS, NOVEMBER- 2019**

**First Semester**

**COMPUTER SCIENCE ENGINEERING**

**DESIGN & ANALYSIS OF PARALLEL ALGORITHMS**

**Time: Three Hours**

**Maximum marks:60**

**Answer Question No.1 Compulsory**

**6X2=12 M**

**Answer ONE Question from each Unit**

**4X12=48 M**

1. a) Distinguish between pipelining and parallelism
- b) Pyramid network is superior to mesh and tree models. Justify
- c) Difference between permutation and combination
- d) What is task-throughput?
- e) What is data-parallel computation?
- f) Brief on memory bound computations.

**UNIT-I**

2. Explain Parallel Random Access Machine. Elaborate on EREW, CREW and CRCW with suitable examples.

**(OR)**

3. a) What are the desirable properties of parallel algorithms? Explain.
- b) Write a brief on SIMD algorithms.

**UNIT-II**

4. a) Explain the steps in Designing Parallel Algorithms.
- b) Give parallel bubble sort algorithm.

**(OR)**

5. Explain the implementation and analysis of CREW Merge sort and give an example to implement the same.

**P.T.O**

### UNIT-III

6. a) Write about matrix multiplication algorithm on SIMD model?  
b) Explain the concept of Mesh multiplication and give its algorithm.

**(OR)**

7. Explain row wise 1 D & 2-D partitioning parallel algorithm for Matrix-Vector Multiplication.

### UNIT-IV

8. a) Explain the concept of connectivity matrix and connected components.  
b) Explain with suitable example the concept of Minimum spanning tree.

**(OR)**

9. a) Explain the concept of sequential tree traversal with suitable example.  
b) What do you mean by cost-optimality? Discuss any one cost optimal algorithm in detail.



**IV/IV B.Tech. (Supple) DEGREE EXAMINATIONS, JUNE- 2019****First Semester****COMPUTER SCIENCE ENGINEERING****DESIGN AND ANALYSIS OF PARALLEL ALGORITHM****Time: Three Hours****Maximum marks:60****Answer Question No.1 Compulsory****6X2=12 M****Answer ONE Question from each Unit****4X12=48 M**

1.
  - a) Bitonic sequence
  - b) Mention scientific applications of parallel computing
  - c) What is task-throughput?
  - d) Brief on parallel sorting networks?
  - e) What is the complexity of prefix sum in pram model?
  - f) What is data-parallel computation?

**UNIT-I**

2.
  - a) Explain Metrics for Parallel Algorithms.
  - b) Give Asymptotic Application of EREW Summation. Explain.

**(OR)**

3. Give Hypercube-connected architectures of zero, one, two, three, and four dimensions. Illustrates routing of a message in a four-dimensional hypercube with an example.

**UNIT-II**

4. Give an example code for divide and conquer. Explain process of Parallelizing Divide & Conquer with an example.

**(OR)**

5.
  - a) Explain parallel Quick sort algorithm.
  - b) What is parallel reduction? Give analysis of parallel reduction algorithm.

**P.T.O**

### UNIT-III

6. What is DNS algorithm for Matrix multiplication? Discuss performance analysis of DNS algorithm

(OR)

7. a) Explain Pipelined Gaussian elimination on a 5X5 matrix stripe-partitioned with one row per processor.  
b) Discuss about solution of linear equations.

### UNIT-IV

8. Explain parallel depth first and breadth first searching algorithms.

(OR)

9. Explain the algorithm for finding Prefix sums on a d-dimensional hypercube. Discuss Knapsack Problem.

