Subject Code : QG532B

PAPER – XXXII – ELECTIVE – III – PARALLEL ALGORITHMS.

UNIT – I

Need for parallel computers, Modules of computation, Analyzing Algorithms, Expression Algorithms – Broadcast, All sum and selection Algorithms on SIMD model – Searching a sorted sequence: EREW, CREW, SM-SIMD Algorithms – Searching a Random sequence on shared memory SIMD, Tree and mesh interconnection computers.

UNIT – II

Sorting on a Linear Array, Sorting on a Mesh, Sorting on EREW SIMD Computer, MIMD Enumeration sort, MIMD Quick sort – Sorting on other networks.

UNIT – III

Matrix Transposition – Mesh Transpose, Shuffle Transpose, EREW transpose – Matrix by matrix multiplication: Mesh Multiplication, Cube multiplication – Matrix by Vector Multiplication : Linear Array Multiplication, Tree Multiplication.

UNIT – IV

Solving Numerical Problems, Solving systems of linear Equations: An SIMD algorithm, An MIMD Algorithms – Finding Roots of Non Linear Equation: An SIMD Algorithms, An MIMD Algorithm – Solving partial Different Equations, Computing Eigenvalues.

UNIT – V

Solving Graph Theoretical problems, Computing the connectivity matrix – Finding connected components, All pairs shortest paths, Traversing combinatorial spaces, sequential tree traversal – Minimal Alpha – Beta Tree, MIMD Alpha-Beta Algorithm, Parallel cutoffs – Storage requirements.

Text Book:

Selim G.Ak1, “The Design and Analysis of Parallel Algorithm, Prentice Hall.

Reference Books:

S.Lakshmivarahan and Sundarshan, K.Dhall, “Analysis and Design of Parallel Algorithms”, McGraw Hill, 1990.