Total No. of Questions : 10]

SEAT No. :

P2354

[Total No. of Pages : 3

[5254] - 687
B.E. (Information Technology) (Semester - I)
PARALLEL ALGORITHMS AND DESIGN
(2012 Pattern)

Time :2½ hours] *[Max. Marks :70*

Instructions to the candidates:

1) *Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Q10.*
2) *Figures to the right indicate full marks.*
3) *Assume suitable data wherever necessary.*
4) *Neat diagram must be drawn whereever necessary.*

Q1) a) What is the difference between data-parallel computation and task-parallel computation? What is parallel efficiency? **[4]**

b) Consider the example of parallelizing bubble sort. Explain the performance analysis in serial and parallel versions. **[6]**

OR

Q2) a) Describe pyramid network processor organization for parallel computers. **[5]**

b) Write an algorithm to find minimum in parallel model using either CRCW or CREW model. **[5]**

Q3) a) Explain the term biotonic sorter, Biotonic sequence and half cleaner. **[6]**

b) What do you mean by cost optimality? What is cost of parallel algorithm? Explain time optimality. **[4]**

OR

Q4) a) Explain the Depth first search with suitable example. **[4]**

b) What do you mean by overhead function or total overhead of a parallel system, how does this effect on the performance of the parallel algorithms? **[6]**

Q5) a) Explain MESH Transpose. Write algorithm for same. **[8]**

b) Explain Conjugate Gradient Method-Sequential Algorithm. **[8]**

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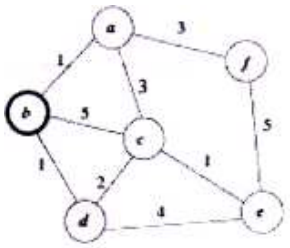
OR

Q6) a) Explain eigen values. State suitable example and derive algorithm for finding eigen values. **[8]**

b) Analyse Cube connected Transpose. Check algorithm for optimality. **[8]**

Q7) a) What is MST? Solve Given problem Using Prims algorithm of parallel computing. **[10]**



b) Define BFS. Write an algorithm for BFS in parallel computing. **[8]**

OR

Q8) a) Define DFS. Write an algorithm of DFS in parallel computing. **[8]**

b) Give the visited node order for each type of graph search, starting with s, given the following adjacency **[10]**

adj(s) = [a, c, d]

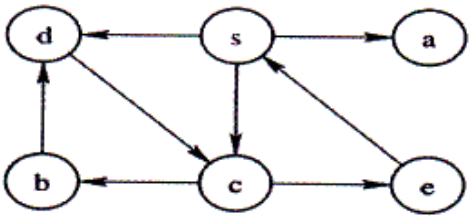
adj(a)=[],

adj(c) = [e, b],

adj(b) = [d],

adj(d) = [c],

adj(e) = [s].



Q9) a) Explain linear and non-linear pipelines stages in parallel computing? **[8]**

b) Explain the algebric method in synthesis of parallel algorithm. **[8]**

OR

Q10)a) Explain the knapsack problem with branch and bound algorithm? **[8]**

b) Describe map reduce computation in homomorphism? **[8]**