Total No. of Questions : 10]

SEAT No. :

P3180

[Total No. of Pages : 2

[5354]-697

B.E. (Information Technology)

PARALLEL ALGORITHMS AND DESIGN

(2012 Pattern) (Elective - I) (Semester - I)

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 where ever necessary.***

Q1) a) What do you mean by sequential model of computation? Explain. **[5]**

b) With respect to hypercube model, what is a hypercube connection? What is The diameter of an n-node hypercube? **[5]**

OR

Q2) a) Define PRAM model of computation? **[5]**

b) Design the parallel algorithm to construct merging network and use the same For merge sort. **[5]**

Q3) a) Describe the pyramid network with suitable diagram. Also give its diameter and bisection with. **[5]**

b) What is mean by speed up in parallel algorithms? How much performance gain is achieved by parallelizing a given application over a sequential implementation? **[5]**

OR

Q4) a) Differentiate between hypercube and Cube connected cycle parallel computation network. **[5]**

b) What is data parallelism? Explain is it similar to pipelining. Discuss. **[5]**

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Q5) a) Discuss parallel quick sort algorithm in detail. **[8]**

b) Explain Homomorphism-based Structured in Parallel Programming? **[8]**

OR

Q6) a) Which of the following sequences are biotonic sequences: **[8]**

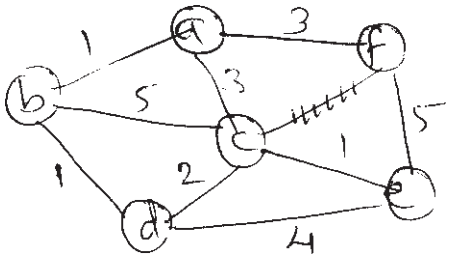
i) 8,4,2,1,2,5,7,9

ii) 6,2,6,9,7

b) Discuss hyperquick sort algorithm with an example. **[8]**

Q7) a) Explain Conjugate Gradient Method-Sequential Algorithm. **[8]**

b) What is MST? Solve Given problem using Kruskal parallel computing algorithm. **[10]**



OR

Q8) a) Write short note on any three: **[12]**

i) Permutation in parallel computing

ii) Combination in parallel computing

iii) Derangements in parallel computing

iv) The applications of Depth First Search

b) Explain the need of BFS Traversal of graph algorithm? **[6]**

Q9) a) Explain the terms and its stages with neat Diagram. **[8]**

i) Pipelines

ii) Homomorphism.

b) Explain Homomorphism-based Structured in Parallel Programming? **[8]**

OR

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

b) What is computer algebra system? Draw and explain its framework. **[8]**

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