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NPTEL

Courses » **Parallel Algorithms**

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Unit 12 - Week 10: Interconnection Networks Algorithms

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Course outline

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Week 01: Models of Computation

Week 02: Performance of parallel algorithms,Basic techniques

Week 03: Basic Techniques

Week 04: Comparator Networks; List Colouring

Week 05: An Optimal List Ranking algorithm

Week 06: Applications of Optimal List Ranking algorithm, Expression Tree Evaluation, Merging and Cole's Merge Sort

Assessment 10

The due date for submitting this assignment has passed.
As per our records you have not submitted this **Due on 2019-04-10, 23:59 IST.**
assignment.

1) The number of nodes and edges in an 8×8 mesh of trees is _____, *1 point*
respectively.

  ◯ 144, 192

  ◯ 176, 224

  ◯ 120, 144

  ◯ 80, 96

No, the answer is incorrect.
Score: 0

Accepted Answers:
176, 224

2) The diameter of an 8×8 mesh of trees is _____. *1 point*

  ◯ 14

  ◯ 8

  ◯ 12

  ◯ 16

No, the answer is incorrect.
Score: 0

Accepted Answers:
12

3) Which of the following networks is not Hamiltonian, for $r > 2$? *1 point*

  ◯

    r -D Hypercube

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No, the answer is incorrect.
Score: 0

Accepted Answers:
　　r-D butterfly

4) G_1 is a graph with 8 vertices and 13 edges. G_2 is a graph with 7 vertices and 16 edges.　**1 point**
The cross product of G_1 and G_2 has _____ edges.

- ○ 91
- ○ 219
- ○ 128
- ○ 208

No, the answer is incorrect.
Score: 0

Accepted Answers:
219

5) A 3×5 mesh cannot be embedded in which of the following networks?　**1 point**

- ○ the cross product of H_2 and H_2
- ○ the cross product of H_2 and H_3
- ○ the cross product of H_3 and H_2
- ○ the cross product of H_1 and H_4

No, the answer is incorrect.
Score: 0

Accepted Answers:
　　the cross product of H_2 and H_2

6) An H_3 is to be renamed so that node $u = 4$ gets renamed $u' = 6$ and dimensions 1, 2, 3 **1 point**
become dimensions 3, 1, 2 respectively, where dimension 1 is the most significant, and dimension 3 is
the least significant. What is the new name of vertex 3?

- ○ 1
- ○ 4
- ○ 5
- ○ 7

No, the answer is incorrect.
Score: 0

Accepted Answers:
1

7) A complete binary tree of 15 nodes is not embeddable in H_4, because if it were, the　**1 point**
number of nodes with the same parity as the root would be _____, and the remaining nodes of the
tree would have the opposite parity, a contradiction.

- ○ 8
- ○ 5
- ○ 10
- ○ 6

No, the answer is incorrect.

Score: 0

Accepted Answers:
5

8) The number of edges in a 3-D CCC is _____.   *1 point*

- ⭕ 12
- ⭕ 48
- ⭕ 36
- ⭕ 24

No, the answer is incorrect.
Score: 0

Accepted Answers:
36

9) In an r-D butterfly, there is a path of length _____ from any node in the 0-th column to   *1 point*
any node in the r-th column.

- ⭕ $r - 1$
- ⭕ $2r$
- ⭕ $r + 1$
- ⭕ r

No, the answer is incorrect.
Score: 0

Accepted Answers:
r

10)In a 1-dimensional Benes-network, each node in the leftmost column has two inputs and   *1 point*
each node in the rightmost column has two outputs. Inputs 1, 2, 3 and 4 have to be connected to
outputs 2, 4, 1, and 3 respectively. The inputs and outputs are numbered 1,2, 3 and 4 top to bottom.
Each node of the network is a 2×2 switch. If the top left switch is configured straight, then the nodes
in the middle column are to be configured _____, top to bottom, to connect the inputs to the
corresponding outputs using edge-disjoint paths.

- ⭕ straight and straight
- ⭕ cross and cross
- ⭕ cross and straight
- ⭕ cross and cross

No, the answer is incorrect.
Score: 0

Accepted Answers:
cross and cross

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