Chapter 21 – Parallel Algorithms

1. Which of the following is one of the important components of an instruction?
    a. Opcode
    b. Stream
    c. ASCII
    d. UFC

    Ans: a) Opcode
2. Which of the following has both instruction stream and data stream as 1?
    a. SISD
    b. SIMD
    c. MISD
    d. MIMD

    Ans: a) SISD
3. Which of the following has both instruction stream and data stream > 1?
    a. SISD
    b. SIMD
    c. MISD
    d. MIMD

    Ans: d) MIMD
4. Which of the following is not a classification of multiprocessor system?
    a. Message Passing System
    b. PRAM Model
    c. Modular Memory System
    d. SSID

    Ans: d) SSID
5. The property of non-uniform memory access (NUMA) is exhibited by
    a. Every processor has a shared memory
    b. Multi-processing System
    c. Bus Length
    d. Operating System

    Ans: a) Every processor has a shared memory
6. Maximum depth of the wire model having 64 nodes is
    a. 6
    b. 2^6
    c. $log_2 6$
    d. 3

    Ans: a) 6
7. _______ can allow any processor to connect with any other processor simultaneously.
    a. Bus
    b. Hyper cube
    c. Mesh
    d. Dynamic Interconnection Network

    Ans: d) Dynamic Interconnection Network
8. Diameter in parallel systems refers to
    a. Longest path between any two processor
    b. Number of Vertices

c. Number of Bits transmitted across nodes
d. Time taken for transmission of messages

Ans: a) Longest path between any two processor

9. Which of the following create an issue in parallel systems?
   a. Parallel Reading
   b. Parallel Writing
   c. Parallel Transmission
   d. None of the Above

   Ans: b) Parallel Writing

10. Which of the following option is a bounding factor for parallel algorithms?
    a. $\frac{1}{f}$
    b. N
    c. $\frac{1}{n}$
    d. f

    Ans: a) $\frac{1}{f}$

11. If no optimal sequential algorithm is known, ________ is a useful parameter
    a. Efficiency
    b. Cost
    c. Number of processor
    d. Speed-up

    Ans: a) Efficiency

12. Maximum expected speed of the parallel algorithms
    a. $\frac{1}{n-f+\frac{f}{n}}$
    b. $\frac{1}{\left(\frac{f-1}{n}\right)+1}$
    c. $\frac{n}{n+(1-n)f}$
    d. $\frac{1}{f}+\frac{1}{n}+\frac{1}{2}$

    Ans: c) $\frac{n}{n+(1-n)f}$

13. If lower bound of the sequential algorithm is same as the cost of parallel algorithm, it is called as ______
    a. Cost optimal algorithm
    b. Efficient algorithm
    c. Cost effective
    d. Not optimal algorithm

    Ans: a) Cost optimal algorithm

14. The complexity of parallel search algorithm is ______ (N is number of Processor)
    a. $O(N)$
    b. $O(N^2)$
    c. $O(N\,log\,N)$
    d. $O(log\,N)$

Ans: a) O(N)

15. The complexity of parallel odd-even swap sort algorithm is _____
    a. $O(n^2)$
    b. $O(n)$
    c. $O(n \log n)$
    d. $O(log\, n)$

    Ans: a) $O(n^2)$

16. The maximum number of processors for executing shortest path algorithm parallelly _____
    a. $O\left(\frac{n^3}{log_2 n}\right)$
    b. $O(n^2)$
    c. $O\left(\frac{n}{log_2 n}\right)$
    d. $O(n^3)$

17. The time complexity for computing prefix parallelly is _____
    a. $O(n^2\, log\, n)$
    b. $O(n)$
    c. $O(n\, log\, n)$
    d. $O(n^3)$

    Ans: c) $O(n\, log\, n)$

18. How much time the iteration happens if 24 inputs are provides as input form odd-even swap sort is ____
    a. 12
    b. 24
    c. 18
    d. 10

    Ans: a) 12

19. If the values to be written by all processors are same, then it is permitted in _______
    a. Priority CRCW
    b. Common CRCW
    c. Arbitrary CRCW
    d. Fusion CRCW

    Ans: b) Common CRCW

20. The bisection width of the dynamic interconnection network is same as _____
    a. Dijkstra's Algorithm
    b. Breadth first search
    c. Binary search tree
    d. Min Cut algorithm

    Ans: d) Mincut algorithm