Assignment 2

1. The processor can access data from among the following in the fastest way from:

a. L1 cache
b. L3 cache
c. Solid state drive
d. RAM

Correct option: a

2. The access time for L1 cache is around:

a. 0.2 ns
b. 1 ns
c. 3-10 ns
d. 10-20 ns

Correct option: b

3. What is the bottleneck in parallel programming for large data?

a. Intercommunication between processors
b. Processor clock speed
c. Memory size
d. Number of processors

Correct option: a
Explanation: For large data sizes, the overhead of communication between processors can become a bottleneck.

4. What is the fastest network architecture?

a. Linear
b. Ring
c. Square
d. Crossbar switch

Correct option: d

5. In a ring network with 6 nodes, what is the maximum hops between any two nodes?

a. 1
b. 2
c. 3
d. 4

Correct option: c

6. What is the full form of MPI?
a. Memory Passing Interface
b. Memory Pull Interface
c. Message Passing Interface
d. Message Pull Interface

Correct option: c

7. What is the primary operation of MPI functions?
a. To provide a shared memory environment
b. To optimize codes
c. To pass messages between distributed memory systems
d. To increase the clock speed of processors

Correct option: c
Explanation: MPI is specifically designed to allow communication between processes in distributed memory systems.

8. What is the main advantage of a distributed memory system over a shared memory system?
a. Faster communication between processors
b. Easier to program
c. More memory bandwidth
d. Handling large datasets

Correct option: d
Explanation: Distributed memory systems are ideal for large datasets as each processor has its own memory, reducing contention.

9. Which programming model is typically used for task-level parallelism?
a. SIMD (Single Instruction, Multiple Data)
b. MIMD (Multiple Instruction, Multiple Data)
c. Shared Memory Model
d. SPMD (Single Program, Multiple Data)

Correct option: b
Explanation: MIMD allows different processors to execute different instructions on different data, which is typical of task-level parallelism, where each processor performs a separate task.

10. In data-level parallelism, which of the following is often used to execute the same operation on multiple data elements simultaneously?

a. SIMD (Single Instruction, Multiple Data)
b. SPMD (Single Program, Multiple Data)
c. MPMD (Multiple Program, Multiple Data)
d. MPI (Message Passing Interface)

Correct option: a

Explanation: SIMD allows a single instruction to be applied to multiple data elements simultaneously, making it ideal for data-level parallelism.