Parallel and Distributed Computing (7A) Quiz 01 (Fall 2022). Instructor: Dr. Syed M. Irteza		Name: ***SOLUTION***
Date: 2022-09-15		Roll Number:
Total Marks: 14	Time Allowed: 12 mins	

1. What value may assist us in finding out if parallel overhead exists when running a program using multiple processors in parallel?
    a. ***Karp-Flatt Metric***
    b. Theoretical Speedup (Amdahl's Law)
    c. Moore's Law
    d. Fraction of the program that is parallelizable

2. We would call a set of _____ computers that may run different OSes as _____
    a. co-located; a static network
    b. ***dispersed; network of workstations***
    c. co-located; network of workstations
    d. dispersed; cluster

3. Most modern day parallel architectures would fall under which category of Flynn's taxonomy?
    a. SISD
    b. MISD
    c. SIMD
    d. ***MIMD***

4. What form(s) of PRAM would require an arbitration mechanism?
    a. ERCW
    b. CRCW
    c. ***ERCW and CRCW***
    d. EREW and CREW

5. When calculating message passing costs, we would assume that t_w would be effected by?
    a. ***Bandwidth of the links***
    b. Switch latencies
    c. Number of hops
    d. Time needed to add headers

6. In comparison to packet routing, cut-through routing total communication time differs by?
    a. A larger t_s
    b. A smaller t_h
    c. ***A smaller t_w***
    d. A larger t_w

7. Would you agree that a multi-stage network is an example of an interconnection network where none of the data paths are shared? (4m)

    No, all data paths are shared. Crossbar is the case where no paths are shared.

8. In general, would you expect the result of the arbitrary and sum arbitration protocols to be the same, in the case of a concurrent write? (4m)

   Arbitrary and sum arbitration protocols should produce different results. The sum adds the result of each write operation, whereas arbitrary randomly selects the result of one operation.