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| 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?
   1. ***Karp-Flatt Metric***
   2. Theoretical Speedup (Amdahl’s Law)
   3. Moore’s Law
   4. Fraction of the program that is parallelizable
2. We would call a set of \_\_\_\_\_\_\_ computers that may run different OSes as \_\_\_\_\_\_\_\_\_\_
   1. co-located; a static network
   2. ***dispersed; network of workstations***
   3. co-located; network of workstations
   4. dispersed; cluster
3. Most modern day parallel architectures would fall under which category of Flynn’s taxonomy?
   1. SISD
   2. MISD
   3. SIMD
   4. ***MIMD***
4. What form(s) of PRAM would require an arbitration mechanism?
   1. ERCW
   2. CRCW
   3. ***ERCW and CRCW***
   4. EREW and CREW
5. When calculating message passing costs, we would assume that ***tw*** would be effected by?
   1. ***Bandwidth of the links***
   2. Switch latencies
   3. Number of hops
   4. Time needed to add headers
6. In comparison to packet routing, cut-through routing total communication time differs by?
   1. A larger ***ts***
   2. A smaller ***th***
   3. ***A smaller tw***
   4. A larger ***tw***
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.***

1. 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.***