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| Parallel and Distributed Computing (6F)  Quiz 01 (Spring 2022) | | Name: |
| Instructor: Dr. Syed M. Irteza | |
| Date: 2022-04-18 | | Roll Number: |
| Total Marks: 15 | Time Allowed: 10 minutes |

1. Assuming recursive doubling, what would the cost estimate of 1-to-all broadcast be (m = message size, ts = startup time, tw = transfer time, p = number of processes)? [3m]
   1. T = (ts + mtw) \* log(p)
   2. T = (ts + ptw) \* log(m)
   3. T = (ts + ptw) \* p
   4. T = ts + (ptw \* p)
2. For a 4\*8 mesh, using a naïve solution, how many messages would you expect the sending process to send, for a 1-to-all broadcast? [3m]
   1. Less than 10
   2. Less than 16
   3. Less than 22
   4. More than 30
3. With all-to-1 reduction, we are essentially? [3m]
   1. Requiring all (p-1) processes to send messages to 1 process
   2. Requiring all p processes to send messages to 1 process
   3. Requiring all (p-1) processes to send messages to all p process
   4. Requiring 1 process to send messages to (p-1) processes
4. What does the OpenMP ***critical*** construct do, when is it used? What effect does it have on overall performance [6m]