Week 5 Assignment 5

Due on 2020-10-21, 23:00:00

1. MPI_Reduce() reduces a variable from the local values in all processors and the reduced value is stored as global variable
   a. True
   b. False

2. One processor is sending number of data packets to another processor through successive send command. How can the receiving processor identify a particular data packet and receive it in the desired buffer?
   a. Using first member of the normal process
   b. Through status variable
   c. By matching message tag
   d. Program should contain receive immediately after send

3. What happens if an MPI_Comm_set() call is not followed by an MPI_Comm_split() call?
   a. The program will crash at the receiving processor
   b. Program gives empty output
   c. Compiler finds no data from the designated processor with latency
   d. None of the above

4. Which of the send-receive operation can overlap communication with computation and reduce latency?
   a. MPI_SEND & MPI_RECV
   b. MPI_SEND & MPI_UNGATHER
   c. MPI_SEND & MPI_RECV
   d. None of the above

5. A matrix-vector multiplication is done using a distributed MPI program where each processor multiplies few rows of the matrix and obtains few rows of the product vector. Now, the product vector has to be assembled from its distributed components in different processors. Which communication call should be used for best efficiency?
   a. MPI_SEND & MPI_RECV
   b. MPI_ALLGATHER
   c. MPI_Scatter
   d. MPI_ALLGATHER

6. The accuracy of a numerical method for PDEs depends on the number of finite point values at which the equation is solved
   a. True
   b. False

7. Does 2n+1 factors in the solution of the equation over the actual value for matrix equations?
   a. Less number of floating point operations
   b. Approximate solutions are not obtained first
   c. Less numerical error
   d. Less storage

8. Interdomain data communication in a domain decomposition method ensures continuity of the solution across domains.
   a. True
   b. False

9. How does one ensure global convergence in a domain decomposition based when implementation?
   a. Values at an interdomain boundary from both sides are same
   b. Convergence is obtained at all subdomains
   c. Convergence is obtained by at least one subdomain
   d. The iterations work without the send-receive calls

10. Checksums in a domain decomposition method MPI program is not due to
    a. Load balancing in assigning subdomains to each process
    b. Communication among the subdomains for boundary value and convergence check
    c. Synchronization before finding global residual for convergence
    d. False startingvals updating boundary values