

Parallel Computing  
Minor-II

Max. Marks: 20

Date: October 28<sup>th</sup>, 2014

Duration 60 min

- Note: 1. Attempt all questions.  
2. Draw neat diagrams, if needed.
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Q.1 Write a C/MPI program Gather sets of 30 integers from each process in the group to the root. [4]

Q.2 What are condition variables? How and when do you use in the OpenMP program? [4]

Q.3 Explain the working behavior of the following program segment and write your comments. Assume that there is no syntax error in the program segment. [4]

```
int a[10], b[10], npes, myrank;  
MPI_status status;  
...  
MPI_Comm_size(MPI_COMM_WORLD, &npes);  
MPI_Comm_rank(MPI_COMM_WORLD, &myrank);  
MPI_Send(a, 10, MPI_INT, (myrank+1)%npes, 1, MPI_COMM_WORLD);  
MPI_Recv(b, 10, MPI_INT, (myrank-1+npes)%npes, 1, MPI_COMM_WORLD);  
...
```

Q.4 What is Single Program Multiple Data (SPMD) model? Explain the general structure of a C program that uses SPMD model. [4]

Q.5 What are the alternatives for programming shared memory multiprocessors. Which one is better and why? [4]

-----Best of Luck-----