Second Sessional Examination 2021

B.Tech Computer Engineering VII Semester

Parallel and Distributed Computing, CEN704

Time:-One Hour Max Marks:-15

Attempt all questions.

Q1. What is CUDA ? Write a CUDA program using C for matrix multiplication. 04 Marks

Q2. Design SIMD algorithm for NXN Matrix multiplication with computational complexity as O(N) 03 Marks

Q3. Consider the following program code.

```
L1:  for(I=1;I<=2048;I++)
        {
L2:      SUM[I]=0;
L3:      for(j=1; J<=I;J++)
             {
L4:          SUM[I]=SUM[I] +I
             }
        }
```

Suppose L2 and L4 each takes two machine cycle times including all CPU and memory access activities and ignore the overhead caused by the software loop statement L1 and L3 and all other system overhead and resource conflicts. Parallelize the above program to facilitate a balanced parallel execution of the entire computational work load over 32 processor available in shared memory multiprocessor. By a balanced load it is meant that an equal number of additions assigned to each processor with respect to both loops. Write the parallel program. Calculate the speed up of the parallel program over the sequential program. 04 Marks

Q4. Write an MPI program to find factorial of a given integer . 04 Marks