

**MAY 2022 - ENDSEM EXAM**  
**FINAL YEAR B.TECH. (COMPUTER ENGINEERING)**  
**(SEMESTER - II)**  
**COURSE NAME: PROFESSIONAL ELECTIVE- IV**  
**[HIGH PERFORMANCE COMPUTING]**  
**COURSE CODE: CSUA40181C**  
**(PATTERN 2018)**

Time: [1 Hr]

Max. Marks: [30]

**MARKING SCHEME**

Q1a	Explanation on minimum & cost optimal execution time of parallel program [4 marks]
Q1b	Row wise 1-D partitioning explanation with example matrix-vector multiplication? [2 + 4 marks]
Q2 a	Performance Metrics for parallel Systems [1. Execution Time, 2. Total Parallel Overhead, 3. Speedup, 4. Efficiency, 5. Cost ] [4 marks]
Q2 b	Explanation of 2-D partitioning with example. [ 6 marks]
Q3 a	Solution of the problem using bitonic sort: 3,5,8,9,10,12,14,20,95,90,60,40,35,23,18,0 [4 marks]
Q3 b	Comparison of an sequential and parallel Merge sort [4 marks]. Give the complexity for the same [2 marks]
Q4a	Explanation on use of increasing and decreasing comparators used in Sorting Networks [4 marks]
Q4b	communication strategies for parallel BFS [6 marks]
Q5 a	CPU and GPU comparison [2 marks] with diagram [2 marks]
Q5 b	a CUDA program that copies the array from Host to device, multiply 50 in each array element, copy the result from device to host and print the elements. [ 4 marks] Steps to run the code? [2 marks]
Q6 a	Memory hierarchy in CUDA? [ 4marks]
Q6 b	CUDA program to add two arrays [ 6 marks]