Name :
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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

07 THRISSUR CLUSTER

SECOND SEMESTER M.TECH. DEGREE EXAMINATION APRIL 2018

Computer Science & Engineering

07CS6104 ADVANCED PARALLEL COMPUTING

Time : 3 hours **Max.Marks: 60**

Answer all six questions. Part 'a' of each question is compulsory.

Answer either part 'b' or part 'c' of each question

Q.no	Module 1	Marks
1a	Define superscalar execution and also explain the issues to be solved in superscalar execution?	4
	Answer b or c	
b	Illustrate with example, the parallel program execution with the simple three-state coherence protocol and the implementation of coherence protocols using hardware mechanisms.	5
c	Explain store and forward routing and cut through routing in terms of communication cost?	5

Q.no	Module 2	Marks
2a	Explain scatter and Gather.	4
	Answer b or c	
b	With the help of an algorithm explain all to all broadcast on a d-dimensional hypercube.	5
c	Show the mapping of computing prefix sum on an eight node hypercube	5

Q.no	Module 3	Marks
3a	Define I) Task interaction graph II) Task dependency graph	4
	Answer b or c	
b	Explain hybrid decomposition for finding the minimum of an array of size 16 using four tasks.	5
c	Discuss task characteristics in detail.	5

Q.no	Module 4	Marks
4a	Write a short note on source of overhead in parallel programs.	**4**
	Answer b or c	
b	Explain parallel algorithm models.	**5**
c	Illustrate with figure the sources of overhead in parallel programs and the execution profile of a hypothetical parallel program executing on 6 processing elements.	**5**

Q.no	Module 5	Marks
5a	Briefly describe the history of GPU computing.	**5**
	Answer b or c	
b	Explain about send and receive operations, and its implementation in MPI.	**7**
c	Write a CUDA program for implementing multiplication of two matrices.	**7**

Q.no	Module 6	Marks
6a	Demonstrate with example any one of the parallel sorting method.	**5**
	Answer b or c	
b	Illustrate the concept of Parallel Random number generators with suitable diagrams.	**7**
c	Explain parallel prim's algorithm with example.	**7**