Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
ME – SEMESTER –II-(New)-EXAMINATION – SUMMER-2019

Subject Code: 3720220   **Date: 30/05/2019**
Subject Name: HPC Architecture and ECO system
Time: 02:30 PM TO 05:00 PM   **Total Marks: 70**
Instructions:
1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Explain Flynn's Classification of Parallel Processing System with neat diagram.	**07**
	(b)	Write a short note on Message Passing Interface.	**07**
Q.2	**(a)**	Explain the concept of Synchronization of OpenMp.	**07**
	(b)	Explain Granularity, Concurrency and Dependency graph.	**07**
		OR	
	(b)	Draw and explain architecture of Uniform Memory Access (UMA) and Non Uniform Memory Access (NUMA).	**07**
Q.3	**(a)**	Define term HPC and Elaborate it's to Indian Society.	**04**
	(b)	Share your thoughts about how HPC will help to promote "MAKE IN INDIA" initiative.	**03**
	(c)	What are Principles of Message Passing Programming?	**07**
		OR	
Q.3	**(a)**	Explain Dynamic Mapping Schemes for Load balancing in details.	**07**
	(b)	Write a Short note on NVIDIA Tesla GPU. Differentiate a Data Flow Computer from a Control Flow Computer.	**07**
Q.4	**(a)**	Write a short note on Parallel Breath-First-Search.	**07**
	(b)	Explain recursive decomposition technique in detail and draw task dependency graph for the following sequence using quick sort with the recursive decomposition and choose '9' as pivot element initially. 9,5,10,23,6,1,2,3,7,15	**07**
		OR	
Q.4	**(a)**	Differentiate between MPI and OpenMPI.	**07**
	(b)	Write a short note on Parallel Depth-First-Search.	**07**
Q.5	**(a)**	Define HPC Toolkit. Explain HPC Toolkit's primary components and their relationship.	**07**
	(b)	Write a note on: Topologies and Embedding.	**07**
		OR	
Q.5	**(a)**	Define Bug and Debugging. Explain GDB Debugging tools with example.	**07**
	(b)	What is Profiling? Explain CUDA Profiling in details.	**07**