Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VIII(OLD) EXAMINATION – WINTER 2017

Subject Code: 180702 **Date: 02-11-2017**

Subject Name: Parallel Processing

Time: 02:30 pm to 5:00 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)**	What is meaning of memory latency? How memory latency can be improved by cache?	**07**
	(b)	Enlist various decomposition techniques. Explain exploratory decomposition with suitable example.	**07**
Q.2	**(a)**	Explain mutual exclusion for shared variable in Pthreads.	**07**
	(b)	Enlist and discuss different parallel algorithm models in detail.	**07**
		OR	
	(b)	Explain data locality? Explain techniques for maximizing data locality.	**07**
Q.3	**(a)**	Explain Dijkstra's Algorithm for Single-Source Shortest Paths.	**07**
	(b)	What is meant by granularity of the decomposition of a given problem? Discuss the effect of granularity on performance of parallel systems.	**07**
		OR	
Q.3	**(a)**	Explain all-to-all broadcast and all-to-all reduction with examples.	**07**
	(b)	What is isoefficiency function? Derive equation of isoefficiency function.	**07**
Q.4	**(a)**	Discuss buffered non-blocking and non-buffered non-blocking send/receive message passing operations with neat sketches.	**07**
	(b)	Explain odd-even transposition sort algorithm.	**07**
		OR	
Q.4	**(a)**	What is MPI? Explain Following MPI routines with arguments. 1. MPI_Init. 3. MPI_Isend. 2. MPI_Sendrev. 4. MPI_Reduce	**07**
	(b)	Write a note on Synchronization primitives in POSIX.	**07**
Q.5	**(a)**	Discuss mapping of bitonic sort algorithm to a hypercube and a mesh.	**07**
	(b)	Discuss Dijkstra's algorithm for single-source shortest paths.	**07**
		OR	
Q.5	**(a)**	What is sorting network? Explain bitonic sort.	**07**
	(b)	Discuss Prims's algorithm for minimum spanning tree.	**07**

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