Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VIII • EXAMINATION – WINTER • 2014

Subject Code: 180702 **Date: 29-11-2014**

Subject Name: Parallel Processing

Time: 02:30 pm - 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)**	Draw and explain architecture of Uniform Memory Access (UMA) and Non-Uniform Memory Access (NUMA).	**07**
	(b)	Enlist various decomposition techniques. Explain exploratory decomposition with suitable example.	**07**
Q.2	**(a)**	With suitable diagram and example, explain All-to-All Broadcast and All-to-All Reduction.	**07**
	(b)	Enlist and explain in brief, the various PRAM models.	**07**
		OR	
	(b)	Enlist and discuss different parallel algorithm models in detail.	**07**
Q.3	**(a)**	Explain: Performance metrics for parallel systems.	**07**
	(b)	Discuss buffered non-blocking and non-buffered non-blocking send/receive message passing operations with suitable diagram.	**07**
		OR	
Q.3	**(a)**	What is isoefficiency function? Derive equation of isoefficiency function.	**07**
	(b)	Explain following MPI routines with arguments. I. MPI_Send II. MPI_Recv III. MPI_Sendrecv	**07**
Q.4	**(a)**	In context to Pthread, Explain normal, recursive and error check mutex.	**07**
	(b)	Explain Cannon's algorithm for matrix multiplication.	**07**
		OR	
Q.4	**(a)**	Explain following functions with respect to Pthreads API. I. pthread_create() II. pthread_join()	**07**
	(b)	Explain DNS algorithm.	**07**
Q.5	**(a)**	Explain Bitonic sort with example.	**07**
	(b)	Explain Prim's algorithm for minimum spanning tree.	**07**
		OR	
Q.5	**(a)**	Explain Odd-Even Transposition sort Algorithm.	**07**
	(b)	Explain parallel formulations of Dijkstra's algorithm.	**07**

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