Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
ME – SEMESTER – II (New)– EXAMINATION – WINTER-2019
Subject Code: 3720222   **Date: 22-11-2019**
Subject Name: Parallel Algorithms
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)**	Give Comparison of Temporal and Parallel Processing. Also write need for parallelism.	**07**
	(b)	Enlist different parallel algorithm models. Discuss any two models in detail.	**07**
Q.2	**(a)**	Explain Parallel Random Access Machine (PRAM) models.	**07**
	(b)	Which are parallel combinatorial algorithms? Discuss any one in details.	**07**
		OR	
	(b)	Explain parallel algorithm for Quick sort with example.	**07**
Q.3	**(a)**	What is Matrix-Vector multiplication? Explain Matrix-Vector multiplication using 2D partitioning.	**07**
	(b)	Explain Cannon's algorithm for matrix-matrix multiplication with example.	**07**
		OR	
Q.3	**(a)**	What is Matrix-Vector multiplication? Differentiate 1-D and 2-D partitioning in Matrix-Vector multiplication.	**07**
	(b)	Explain DNS algorithm for Matrix-Matrix multiplication with example.	**07**
Q.4	**(a)**	Explain sorted sequence CRCW searching with Analysis.	**07**
	(b)	Explain odd-even transposition. Sort following data 1,3,8,2,9,4,6,5	**07**
		OR	
Q.4	**(a)**	Explain random sequence CREW searching with Analysis	**07**
	(b)	Explain mapping of Bitonic sort to Hypercube.	**07**
Q.5	**(a)**	Explain Sorting by Enumeration in detail.	**07**
	(b)	Discuss the parallel formulation of Prim's algorithm for finding minimum spanning tree with example.	**07**
		OR	
Q.5	**(a)**	Write two rules for Bitonic sequence in Bitonic sorting network, explain the same with example. Briefly discuss Bitonic sort and trace the following sequence using the same. 6, 8, 10, 12, 17, 16, 21, 24, 50, 45, 40, 35, 30, 25, 15, 13	**07**
	(b)	Explain parallel formulations of Dijkstra's algorithm	**07**

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