GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VIII (OLD) EXAMINATION – SUMMER 2020

Subject Code: 180702   **Date: 27/10/2020**

Subject Name: Parallel Processing

Time: 02:30 PM TO 05:00 PM   **Total Marks: 56**

Instructions:
1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

Q.1	**(a)**	Discuss latency and bandwidth of memory in brief. Enlist and explain different ways to minimize latency and to improve bandwidth of memory.	**07**
	(b)	Explain various types of parallel computers.	**07**
Q.2	**(a)**	Discuss the following terms and explain their importance related to parallel algorithm design: - decomposition - concurrency - granularity.	**07**
	(b)	Draw and explain architecture of Uniform Memory Access (UMA) and Non Uniform Memory Access (NUMA) shared-address-space computers.	**07**
		OR	
	(b)	Explain various decomposition techniques in brief.	**07**
Q.3	**(a)**	What is isoefficiency function? Derive equation of isoefficiency function.	**07**
	(b)	Discuss different parallel algorithm models in detail.	**07**
		OR	
Q.3	**(a)**	Enlist and explain various performance metrics for parallel systems.	**07**
	(b)	What is MPI? Explain following MPI routines with their functionalities. - MPI_Init - MPI_Isend - MPI_Send	**07**
Q.4	**(a)**	Discuss buffered non-blocking and non-buffered non-blocking send/receive message passing operations with suitable diagram.	**07**
	(b)	Describe odd-even sort with example.	**07**
		OR	
Q.4	**(a)**	Discuss Prim's algorithm with example.	**07**
	(b)	Explain thread creation, termination and cancellation in detail in shared-address-space supported parallel systems.	**07**
Q.5	**(a)**	Briefly explain parallel algorithm of quick sort with example for shared address space parallel computer.	**07**
	(b)	Elaborate Cannon's algorithm for matrix-matrix multiplication.	**07**
		OR	
Q.5	**(a)**	Explain One-to-All Broadcast and All-to-One Reduction operations.	**07**
	(b)	Discuss cache coherence in multiprocessor systems.	**07**

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