GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VII (NEW) EXAMINATION – WINTER 2022

Subject Code:3170721   **Date:12-01-2023**
Subject Name:Parallel and Distributed Computing
Time:10:30 AM TO 01:00 PM   **Total Marks:70**

Instructions:
1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Simple and non-programmable scientific calculators are allowed.**

Q.1	**(a)**	Explain pros and cons of parallel processing over regular computing.	**03**
	(b)	Explain Parallelism and concurrency using multiple instructions streams.	**04**
	(c)	Explain Dataflow Architecture in Parallel Computing.	**07**
Q.2	**(a)**	Explain memory access classification.	**03**
	(b)	Explain Scope and issues of parallel and distributed computing.	**04**
	(c)	Draw and explain Multi processor architecture.	**07**
		OR	
	(c)	Classify parallel computers based on Flynn's Taxonomy.	**07**
Q.3	**(a)**	Explain Non-Uniform Memory Access.	**03**
	(b)	Explain the terms: scheduling and contention.	**04**
	(c)	Discuss in detail the various performance metrics in parallel computing.	**07**
		OR	
Q.3	**(a)**	Short note on SIMD.	**03**
	(b)	Explain load balancing with suitable example.	**04**
	(c)	Describe Symmetric multiprocessing (SMP) and Vector processing with example.	**07**
Q.4	**(a)**	Differentiate between synchronous and asynchronous Communication.	**03**
	(b)	Explain Parallel graph Algorithms.	**04**
	(c)	How Scalability and cache coherence work in multiprocessor systems?	**07**
		OR	
Q.4	**(a)**	List down design issues of distributed computing.	**03**
	(b)	Discuss the merits and demerits of Distributed Computing.	**04**
	(c)	Draw and explain shared memory architecture.	**07**
Q.5	**(a)**	Write a short note on Apache Hadoop.	**03**
	(b)	Define the following terms: Scalability, Consistency, Atomicity, Consensus	**04**
	(c)	Explain Pthread_t, Pthread_create, Pthread_kill, Pthread_exit API.	**07**
		OR	
Q.5	**(a)**	Differentiate between CUDA and OpenMP?	**03**
	(b)	Explain in details: POSIX Threads.	**04**
	(c)	Explain synchronization mechanism in details.	**07**

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