Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (NEW) EXAMINATION – WINTER 2021

Subject Code:3170721 Date:29/12/2021

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.**

			MARKS
Q.1	**(a)**	Explain advantages and disadvantages of parallel processing.	**03**
	(b)	Explain SIMD	**04**
	(c)	Classify parallel computers based on Flynn's Taxonomy.	**07**
Q.2	**(a)**	Explain Contention in details.	**03**
	(b)	Write a short note on Thread V/s Process.	**04**
	(c)	Explain Pipeline architecture with diagram.	**07**
		OR	
	(c)	Draw and explain Systolic architecture.	**07**
Q.3	**(a)**	Difference between Shared Memory vs. Distributed Memory.	**03**
	(b)	Explain Non-Uniform Memory Access (NUMA).	**04**
	(c)	Describe Symmetric multiprocessing (SMP) and Vector processing with example.	**07**
		OR	
Q.3	**(a)**	Explain Merge short.	**03**
	(b)	Write a short note on Parallel graph Algorithms.	**04**
	(c)	Explain divide and conquer algorithm with suitable example.	**07**
Q.4	**(a)**	List down design issues of distributed computing.	**03**
	(b)	What is the major disadvantages of Distributed Computing?	**04**
	(c)	Make a list of various Distributed systems and explain any one in details.	**07**
		OR	
Q.4	**(a)**	What is the difference between synchronous and asynchronous Communication?	**03**
	(b)	Explain following terms: Consistency and Atomicity.	**04**
	(c)	Draw and explain shared memory architecture.	**07**
Q.5	**(a)**	Explain client server and peer-to-peer communication.	**03**
	(b)	Explain in details: POSIX Threads.	**04**
	(c)	How Scalability and cache coherence work in multiprocessor systems	**07**
		OR	
Q.5	**(a)**	What is CUDA? Explain in details.	**03**
	(b)	List and explain the different types of communication paradigms used within distributed systems.	**04**
	(c)	Explain pthread_t, Pthread_create, pthread_kill, pthread_exit APIs of POSIX thread library.	**07**

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Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (NEW) EXAMINATION – SUMMER 2022

Subject Code:3170721 Date:10/06/2022

Subject Name:Parallel and Distributed Computing

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.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	**(a)**	What are the Goals of parallelism?	**03**
	(b)	Explain Scope and issues of parallel and distributed computing.	**04**
	(c)	What is Parallel Computing? Explain Pipeline Architecture.	**07**
Q.2	**(a)**	Differentiate between UMA and NUMA.	**03**
	(b)	How Pipeline architecture is different from Array processor architecture?	**04**
	(c)	Classify the parallel computers based on Flynn's Taxonomy.	**07**
		OR	
	(c)	Draw and explain Multi processor architecture.	**07**
Q.3	**(a)**	Define the terms: scheduling and contention.	**03**
	(b)	Explain load balancing with suitable example.	**04**
	(c)	Draw and explain Systolic architecture.	**07**
		OR	
Q.3	**(a)**	Difference between Shared Memory and Distributed Memory.	**03**
	(b)	Write a short note on Parallel graph Algorithms.	**04**
	(c)	Explain divide and conquer algorithm with suitable example.	**07**
Q.4	**(a)**	Explain client server and peer-to-peer communication.	**03**
	(b)	Discuss the merits and demerits of Distributed Computing.	**04**
	(c)	Discuss in detail the various performance metrics in parallel computing.	**07**
		OR	
Q.4	**(a)**	Differentiate between synchronous and asynchronous Communication.	**03**
	(b)	List and explain the different types of communication paradigms used within distributed systems.	**04**
	(c)	How Scalability and cache coherence work in multiprocessor systems?	**07**
Q.5	**(a)**	Define the following terms: Consistency, Consensus, and Atomicity.	**03**
	(b)	Write a short note on Apache Hadoop.	**04**
	(c)	Explain pthread_t, Pthread_create, pthread_kill, pthread_exit APIs of POSIX thread library.	**07**
		OR	
Q.5	**(a)**	What is the difference between CUDA and OpenMP?	**03**
	(b)	Explain design issues and challenges in distributed systems.	**04**
	(c)	Draw and explain shared memory architecture.	**07**

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