Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
ME - SEMESTER– I (New course)• REMEDIAL EXAMINATION – SUMMER 2015

Subject Code: 3715504   **Date:16/05/2015**

Subject Name: **Multicore & GPU based Programming**

Time: 10:30 am to 1:00 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 multi-core architecture.	**07**
	(b)	Explain Amdahl∅s and Gustafson∅s Laws.	**07**
Q.2	**(a)**	List the functions are available in MPI, which implements the collective Communication and computation operations and explain.	**07**
	(b)	Explain MPI_SCATTER and MPI_GATHER operations with syntax of it.	**07**
		OR	
	(b)	Explain following MPI functions with its arguments. a. MPI_Send b. MPI_Receive c. MPI_Sendrecv	**07**
Q.3	**(a)**	Larger Cache size always results in higher performance in multi-core architecture. True or False? Give arguments to support your answer..	**07**
	(b)	Discuss Mutex, Condition Variables and barriers with their significance in multi-core programming.	**07**
		OR	
Q.3	**(a)**	Discuss performance analysis tools and its feature on multicore processor systems	**07**
	(b)	Differentiate between programming in message passing paradigm and programming in shared address space platform.	**07**
Q.4	**(a)**	What is OPENCL? Differentiate OPENCL and CUDA.	**07**
	(b)	Write a sample OpenCL program and explain its structure.	**07**
		OR	
Q.4	**(a)**	What is CUDA kernel? Explain it with suitable example.	**07**
	(b)	Write a CUDA program (including CUDA kernel) to find Transpose of a 4 X 4 Matrix.	**07**
Q.5	**(a)**	Explain architecture of Nvidia Geforce GTX 280 with block diagram.	**07**
	(b)	Write a CUDA kernel program to add two vectors in a third array.	**07**
		OR	
Q.5	**(a)**	Discuss CUDA Asynchronous Concurrent Execution model with example.	**07**
	(b)	Write a CUDA kernel code for matrix multiplication.	**07**

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