Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA - SEMESTER–V • EXAMINATION – SUMMER - 2016

Subject Code: 650005 Date: 11/05/2016

Subject Name: Parallel Programming

Time: 10:30 AM to 01:00 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)**	Define the Parallel Programming? Why we need parallel processing? Explain.	**07**
	(b)	List out the techniques to achieve parallelism in sequential machines. Explain all in brief?	**07**
Q.2	**(a)**	What would be the desirable features of an operating system for a shared-memory multiprocessor?	**07**
	(b)	Briefly compare "shared memory programming" and "message passing" on the basis of data sharing and synchronization.	**07**
		OR	
	(b)	Briefly compare "explicit parallel programming" and "implicit parallel programming" on the basis of data sharing and synchronization	**07**
Q.3	**(a)**	What is distributed memory? Explain the NUMA Distributed Memory with suitable diagram?	**07**
	(b)	What is Multiprocessor? Define its type in details with architecture?	**07**
		OR	
Q.3	**(a)**	What are major sources of performance loss? Explain each in detail.	**07**
	(b)	"A Pipelining is the way to achieve Parallelism", How and why? Justify the answer with appropriate diagram and example?	**07**
Q.4	**(a)**	What is loop interchange? How does that help parallel programming?	**07**
	(b)	What is thread and thread based implementation? What do you mean by event and condition variables?	**07**
		OR	
Q.4	**(a)**	What are the advantage and disadvantage of loop-splitting against self-scheduling?	**07**
Q.4	**(b)**	How we can solve a Diophantine Equations in parallel processing environment? Define the process of solution.	**07**
Q.5	**(a)**	What is parallel virtual machine? Define and draw the basic terminology and architecture of Parallel virtual machine.	**07**
	(b)	Write a note on histogram commutation?	**07**
		OR	
Q.5	**(a)**	What is mutual exclusion? What are the major primitives used in programming? Explain all of them with their syntax?	**07**
	(b)	Write a note on matrix chain multiplication?	**07**

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