Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M.C.A.- SEMESTER – V • EXAMINATION – WINTER 2012

Subject code: 650005 Date: 28-12-2012

Subject Name: Parallel Programming (PP)

Time: 10:30 am – 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		Answer the following questions	**14**
	(a)	Give four examples of real life problems which justify the use of parallel processing.	
	(b)	State Amdahl's law for parallel processing	
	(c)	List Flynn's classification of computer.	
	(d)	What is control and resource dependency?	
	(e)	What is shared memory programming?	
	(f)	What are the characteristics of good parallel program?	
	(g)	Define: Contention and Idle time	
Q.2	**(a)**	Explain shared memory architecture models in detail.	**07**
	(b)	Explain the desirable characteristics of multiprocessor.	**07**
		OR	
	(b)	Write detailed note on multiprocessor interconnection network	**07**
Q.3	**(a)**	Explain various program transformation techniques to avoid code dependency	**07**
	(b)	Write short note on heterogeneous chip design.	**07**
		OR	
Q.3	**(a)**	Explain symmetric multiprocessor architecture with schematic diagram.	**07**
	(b)	Explain various types of data dependency using suitable examples.	**07**
Q.4	**(a)**	Write a parallel algorithm for finding minimum element from array.	**05**
	(b)	List various sources of performance losses.	**02**
	(c)	Explain race condition, mutual exclusion and cache coherence problems.	**07**
		OR	
Q.4	**(a)**	What is barrier? Explain need for barrier taking suitable example	**05**
	(b)	What are the constraints behind shared memory programming?	**02**
	(c)	What is parallel virtual machine? Explain architecture of parallel virtual machine.	**07**
Q.5	**(a)**	What is POSIX thread? Explain API to create, destroy and setting thread attributes.	**07**
	(b)	Explain following Message Passing Interface APIs 1. MPI_Reduce() 2. MPI_Finalize() 3. MPI_Recv()	**07**
		OR	
Q.5	**(a)**	What is message passing model? Explain point to point and collective communication in message passing model.	**07**
	(b)	Explain the following terms used in parallel virtual machine 1. Host 2. Virtual machine 3.Task 4. Task-ID 5. PVM-Deamon 6. Message 7. Group	**07**

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