GUJARAT TECHNOLOGICAL UNIVERSITY BE - SEMESTER-VIII • EXAMINATION – SUMMER 2013

Subject Code: 180702		Code: 180702 Date: 13/05/20	Date: 13/05/2013	
Sub	ject	Name: Parallel Processing		
Time: 10:30 am TO 01:00 pmTotal Ma		: 70		
Instr	ruction 1. 2. 3.	is: Attempt all questions. Make suitable assumptions wherever necessary. Figures to the right indicate full marks.		
Q.1	(a)	Draw and explain architecture of Uniform Memory Access (UMA) and Non- Uniform Memory Access (NUMA) shared-address-space computer with	07	
	(b)	Enlist various decomposition techniques. Explain data decomposition with suitable example.	07	
Q.2	(a)	Enlist various performance metrics for parallel systems. Explain Speedup, Efficiency and total parallel overhead in brief	07	
	(b)	Explain scatter and gather operations in detail. OR	07	
	(b)	Draw and explain All-to-All personalized communication on a ring.	07	
Q.3	(a) (b)	Define Isoefficiency function and derive equation of it. Explain following MPI routines with arguments. I. MPI_Send II. MPI_Recv III MPI_Sendrecv	07 07	
		OR		
Q.3	(a) (b)	Explain dynamic mapping schemes for load balancing in details.Explain following MPI routines with arguments.I. MPI_ScanII. MPI_Reduce	07 07	
Q.4	(a)	Explain three types of mutex (normal, recursive and error check) in context to Pthread	07	
	(b)	With respect to Dense Matrix Algorithms, draw and explain Matrix-Vector Multiplication with Rowwise 1-D partitioning. OR	07	
Q.4	(a)	Draw the logical machine model of a thread-based programming paradigm. Also describe the benefits of using Thread in programming.	07	
	(b)	Explain DNS algorithm for Matrix-Matrix multiplication.	07	
Q.5	(a) (b)	Discuss Odd-Even Transposition sort. Discuss Prim's Algorithm for Minimum Spanning Tree. OR	07 07	
Q.5	(a) (b)	Discuss mapping of bitonic sort algorithm to a hypercube and a mesh. Explain Dijkstra's Algorithm for Single-Source Shortest Paths.	07 07	
