Seat No.:	Enrolment No.

**Subject Code:180702** 

## GUJARAT TECHNOLOGICAL UNIVERSITY

## **BE - SEMESTER-VIII EXAMINATION - WINTER 2015**

Date:04/12 /2015

Subject Name: Parallel Processing Time: 2:30pm to 5:00pm Instructions:  1. Attempt all questions. 2. Make suitable assumptions wherever necessary. 3. Figures to the right indicate full marks.		70	
Q.1	(a) (b)	Explain message passing and shared-address-space computers with neat sketches. Differentiate between these two computers.  Draw and explain architecture of Uniform Memory Access (UMA) and Non-Uniform Memory Access (NUMA) shared-address-space computers with applicable caches and memories.	07 07
Q.2	(a) (b)	Explain mutual exclusion for shared variable in Pthreads.  Explain scatter and gather communication operation.  OR  Enlist and discuss different parallel elegation models in detail.	07 07 07
Q.3	<ul><li>(b)</li><li>(a)</li><li>(b)</li></ul>	Enlist and discuss different parallel algorithm models in detail.  Explain Dijkstra's Algorithm for Single-Source Shortest Paths  Discuss Different performance metrics for parallel systems.  OR	07 07 07
Q.3	(a) (b)	Explain sending and receiving messages using MPI.  Explain invalidate protocol used for cache coherence in multiprocessor system.	07 07
Q.4	<ul><li>(a)</li><li>(b)</li></ul>	Discuss buffered non-blocking and non-buffered non-blocking send/receive message passing operations with neat sketches.  What is sorting network? Explain bitonic sort.  OR	07 07
Q.4	(a) (b)	Explain thread creation, termination and cancellation in detail in shared-address-space supported parallel systems.  Define Isoefficiency function and derive equation of it.	07 07
Q.5	(a) (b)	Explain various decomposition techniques. Explain data decomposition with suitable example.  Explain odd-even sort in parallel environment and comment on its limitation.	07 07
Q.5	(a) (b)	OR  Discuss the parallel algorithm for Prim's algorithm and compare its complexity with the sequential algorithm for the same.  Explain multistage network topology.	07 07
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