

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VIII(OLD) EXAMINATION – WINTER 2017

Subject Code: 180702**Date: 02-11-2017****Subject Name: Parallel Processing****Time: 02:30 pm to 5:00 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) What is meaning of memory latency? How memory latency can be improved by cache? **07**
(b) Enlist various decomposition techniques. Explain exploratory decomposition with suitable example. **07**
- Q.2** (a) Explain mutual exclusion for shared variable in Pthreads. **07**
(b) Enlist and discuss different parallel algorithm models in detail. **07**
- OR
- (b) Explain data locality? Explain techniques for maximizing data locality. **07**
- Q.3** (a) Explain Dijkstra's Algorithm for Single-Source Shortest Paths. **07**
(b) What is meant by granularity of the decomposition of a given problem? Discuss the effect of granularity on performance of parallel systems. **07**
- OR
- Q.3** (a) Explain all-to-all broadcast and all-to-all reduction with examples. **07**
(b) What is isoefficiency function? Derive equation of isoefficiency function. **07**
- Q.4** (a) Discuss buffered non-blocking and non-buffered non-blocking send/receive message passing operations with neat sketches. **07**
(b) Explain odd-even transposition sort algorithm. **07**
- OR
- Q.4** (a) What is MPI? Explain Following MPI routines with arguments. **07**
1. MPI_Init. 3. MPI_Isend.
2. MPI_Sendrecv. 4. MPI_Reduce
(b) Write a note on Synchronization primitives in POSIX. **07**
- Q.5** (a) Discuss mapping of bitonic sort algorithm to a hypercube and a mesh. **07**
(b) Discuss Dijkstra's algorithm for single-source shortest paths. **07**
- OR
- Q.5** (a) What is sorting network? Explain bitonic sort. **07**
(b) Discuss Prim's algorithm for minimum spanning tree. **07**
