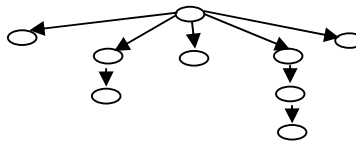


GUJARAT TECHNOLOGICAL UNIVERSITY
BE – SEMESTER–VIII • Remedial EXAMINATION – WINTER 2013

Subject Code: 180702**Date: 16/09/2013****Subject Name: Parallel Processing****Time: 03:00 pm – 05:30 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] Explain superscalar execution in parallel system. 7
 B] What is decomposition of task? Explain data decomposition in detail. 7
- Q.2 A] Explain invalidate protocol used for cache coherence in multiprocessor system. 7
 B] Define and compute the following terms for the given task dependency graph. 7



- a. Maximum degree of concurrency
- b. Critical path length
- c. Maximum speedup cover (serial implementation = 200 s and parallel implementation = 50 s per process)

OR

- B] Write a parallel program to find minimum and maximum from a given array. 7
- Q.3A] What is sorting network? Explain bitonic sort. 7
 B] Explain multistage network topology. 7
- OR
- A] Explain the effect of granularity on performance for addition of n numbers using p processing element. 7
 B] Explain scatter and gather communication operation. 7
- Q.4A] Explain mutual exclusion for shared variable in Pthreads. 7
 B] Explain sending and receiving messages using MPI. 7
- OR
- A] Explain the blocking message passing send and receive operation. 7
 B] Explain read-write locks for composite synchronisation in Pthread. 7
- Q.5A] Explain parallel formulation for CRCW PRAM to parallelize quicksort and differentiate with sequential quicksort 7
 B] Differentiate 1-D and 2-D partitioning in matrix vector multiplication 7
- OR
- A] Explain parallel algorithm for Prim's algorithm and compare its complexity with the sequential algorithm for the same. 7
 B] Explain odd-even sort in parallel environment and comment on its limitations. 7
