

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VIII EXAMINATION – SUMMER 2016

Subject Code:180702

Date:05/05/2016

Subject Name:Parallel Processing

Time:10:30 AM to 01:00 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) Explain the physical organization of Parallel Platforms. 07
(b) Explain pipelining and superscalar execution with suitable examples. 07
- Q.2 (a) Explain One-to-all broadcast and all-to-one reduction communication with suitable examples 07
(b) Explain various data decomposition techniques used to achieve concurrency with examples 07
- OR
- (b) Discuss different parallel algorithm models in detail. 07
- Q.3 (a) Explain the effect of granularity on performance for addition of n numbers using p processing element 07
(b) Discuss different performance metrics of parallel systems. 07
- OR
- Q.3 (a) Differentiate blocking and non-blocking message passing operations 07
(b) Write a short note on Message Passing Interface. 07
- Q.4 (a) Explain the various collective communication operations provided by MPI. 07
(b) Explain the concept of barriers and read-write locks 07
- OR
- Q.4 (a) Explain following functions with respect to Pthreads API. Also discuss arguments of these functions. 07
i. pthread_create()
ii. pthread_join()
(b) Write a note on Synchronization primitives in POSIX 07
- Q.5 (a) Explain Cannon's Algorithm for Matrix-Matrix Multiplication 07
(b) Explain bubble sort and its variants. 07
- OR
- Q.5 (a) Explain bitonic sort with example 07
(b) Write an algorithm for Single-Source Shortest Paths.(Dijkstra's Algorithm) 07
