

GUJARAT TECHNOLOGICAL UNIVERSITY
BE – SEMESTER – VIII. EXAMINATION – WINTER 2016

Subject Code: 180702

Date: 20/10/2016

Subject Name: Parallel Processing

Time: 02:30 PM to 05:00 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) Define: Parallel Processing. Also explain Communication Models for Parallel Platforms. **07**
(b) Explain Mutual Exclusion and Condition Variable with proper example. **07**
- Q.2** (a) Explain Recursive and Data Decomposition Techniques in detail. **07**
(b) Discuss various Parallel Algorithm Models. **07**
- OR**
- (b) Explain One-to-All Broadcast and All-to-One Reduction operations. **07**
- Q.3** (a) Explain Scatter and Gather communication operation. **07**
(b) Explain following functions of MPI: **07**
MPI_Send (), MPI_Comm_size (), MPI_Comm_rank ().
- OR**
- Q.3** (a) What is isoefficiency function? Derive equation of isoefficiency of function. **07**
(b) Explain various MPI Collective Communication and Computation Operations. **07**
- Q.4** (a) What are Threads? Draw and explain Logical Memory Model of a Thread. **07**
(b) What is the role of Comparator in Sorting? Explain Odd-Even Transposition sort algorithm with example. **07**
- OR**
- Q.4** (a) Explain following functions of POSIX Threads: **07**
pthread_create (), pthread_join ().
(b) What is Bitonic Sequence? Explain Bitonic Sort with example. **07**
- Q.5** (a) Explain Cannon's Algorithm for Matrix Multiplication. **07**
(b) Explain Dijkstra's Single Source Shortest Path Algorithm. **07**
- OR**
- Q.5** (a) Explain Prim's Minimum Spanning Tree Algorithm. **07**
(b) With respect to Dense Matrix Algorithms, draw and explain Matrix-Vector Multiplication with Rowwise 1-D partitioning. **07**
