

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VIII • EXAMINATION – SUMMER 2014

Subject Code: 180702

Date: 31-05-2014

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 Cache Coherence in Multiprocessor Systems. **07**
(b) What is Data Decomposition? Explain Data Decomposition with proper example. **07**

- Q.2** (a) Explain All-Reduce and Prefix-Sum operation on Hypercube and also write algorithm for it. **07**
(b) List Various Network Topologies. Explain Crossbar and Multistage Networks. **07**

OR

- (b) Write steps for All-to-All Personalized communication on Mesh and Ring Network. **07**

- Q.3** (a) Explain Different Performance Metrics for Parallel Systems. Explain Speedup in detail. **07**
(b) Write short note on how mutex-locks and condition variable is use for synchronizing shared data in Shared-address-space programming in Pthreads. **07**

OR

- Q.3** (a) Explain Recursive Decomposition technique to find minimum number from array. **07**
Draw task dependency graph for following data. 4, 9, 2, 6, 1, 7, 8, 11, 5, 3, 2, 12
(b) Explain Blocking Non-Buffered Send/Receive and Blocking Buffered Send/Receive for message passing operation. **07**

- Q.4** (a) Explain Matrix-Vector Multiplication using 2-D Partitioning. **07**
(b) Explain following function with respect to MPI. **07**
(1) MPI_Send (2) MPI_Scatter (3) MPI_Gather (4) MPI_Recv

OR

- Q.4** (a) Explain thread creation, termination and cancellation in detail in shared-address-space parallel system. **07**
(b) Explain Matrix-Multiplication using DNS Algorithm. **07**

- Q.5** (a) Explain Mapping of Bionic sort to a Hypercube and Mesh. **07**
(b) Explain Parallel formulation of Prim's Algorithm to find MST. **07**

OR

- Q.5** (a) Write and Explain Floyd's Algorithm for all-pairs shortest paths with an example. **07**
(b) Write and Explain Algorithm for ODD-EVEN Transposition Sort. Also sort following Data. 1, 3, 8, 2, 9, 4, 6, 5 **07**
