

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
ME – SEMESTER-II(NEW)-EXAMINATION – WINTER-2020

Subject Code:3720220

Date: 01/Feb/2021

Subject Name: HPC Architecture and ECO system

Time: 02:00 PM To 04:00 PM

Total Marks: 56

Instructions:

- 1. Attempt any FOUR questions out of EIGHT questions.**
- 2. Make suitable assumptions wherever necessary.**
- 3. Figures to the right indicate full marks.**

- Q.1** (a) What are the Characteristics of tasks and interactions? **07**
(b) Write a Short note on data flow model. **07**
- Q.2** (a) Write a short note on Blocking Message Passing Operation. **07**
(b) Explain SIMD, MIMD and SIMT Architecture. **07**
- Q.3** (a) Explain Parallel algorithms approaches based on load balancing techniques. **07**
(b) Explain the concept of Synchronization of OpenMP. **07**
- Q.4** (a) Explain Granularity, Concurrency and Dependency Graph. **07**
(b) Write a short note on Message Passing Interface. **07**
- Q.5** (a) Explain Graph Partitioning with example. **07**
(b) Explain Parallel BFS and DFS algorithm with example. **07**
- Q.6** (a) Write a note on: Topologies and Embedding. **07**
(b) Explain MPI with overlapping communication with computations. **07**
- Q.7** (a) What are Profiling and PMPI? What Support does OMPI have for performance analysis? **07**
(b) Define Debugging. Explain PAPI (Performance Application Programming Interface) in details. **07**
- Q.8** (a) Explain CUDA Programming Model for HPC Architecture. **07**
(b) Explain Mapping of distributed memory formulation or Shared address Space formulation. **07**