

GUJARAT TECHNOLOGICAL UNIVERSITY
M.C.A.- SEMESTER – V • EXAMINATION – WINTER 2012

Subject code: 650005**Date: 28-12-2012****Subject Name: Parallel Programming (PP)****Time: 10:30 am – 1:00 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** Answer the following questions **14**
- (a) Give four examples of real life problems which justify the use of parallel processing.
 - (b) State Amdahl's law for parallel processing
 - (c) List Flynn's classification of computer.
 - (d) What is control and resource dependency?
 - (e) What is shared memory programming?
 - (f) What are the characteristics of good parallel program?
 - (g) Define: Contention and Idle time
- Q.2** (a) Explain shared memory architecture models in detail. **07**
- (b) Explain the desirable characteristics of multiprocessor. **07**
- OR**
- (b) Write detailed note on multiprocessor interconnection network **07**
- Q.3** (a) Explain various program transformation techniques to avoid code dependency **07**
- (b) Write short note on heterogeneous chip design. **07**
- OR**
- Q.3** (a) Explain symmetric multiprocessor architecture with schematic diagram. **07**
- (b) Explain various types of data dependency using suitable examples. **07**
- Q.4** (a) Write a parallel algorithm for finding minimum element from array. **05**
- (b) List various sources of performance losses. **02**
- (c) Explain race condition, mutual exclusion and cache coherence problems. **07**
- OR**
- Q.4** (a) What is barrier? Explain need for barrier taking suitable example **05**
- (b) What are the constraints behind shared memory programming? **02**
- (c) What is parallel virtual machine? Explain architecture of parallel virtual machine. **07**
- Q.5** (a) What is POSIX thread? Explain API to create, destroy and setting thread attributes. **07**
- (b) Explain following Message Passing Interface APIs **07**
1. MPI_Reduce() 2. MPI_Finalize() 3. MPI_Recv()
- OR**
- Q.5** (a) What is message passing model? Explain point to point and collective communication in message passing model. **07**
- (b) Explain the following terms used in parallel virtual machine **07**
1. Host 2. Virtual machine 3.Task 4. Task-ID
5. PVM-Deamon 6. Message 7. Group
