

GUJARAT TECHNOLOGICAL UNIVERSITY
MCA - SEMESTER– V• EXAMINATION – SUMMER - 2016

Subject Code:2650005**Date:11/05/2016****Subject Name: Parallel Programming (PP)****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) 1. List parallel processing technique used in uniprocessor. **02**
 2. Explain Control dependency and Resource dependency with example. **03**
 3. Define fork() function with code. **02**
 (b) 1. Explain UMA model in brief. **03**
 2. Define: Latency and Throughput. **02**
 3. What is cache coherence issue in multiprocessors? **02**
- Q.2** (a) Explain forward dependency using block scheduling. Give an example of forward dependency. **07**
 (b) Write short note on heterogeneous chip design. **07**
- OR**
- (b) Explain symmetric multiprocessor architecture with schematic diagram. **07**
- Q.3** (a) Explain following terms used in PVM. **07**
 1. Host 2. Virtual machine 3.Task 4. Task-ID 5. PVM-Deamon 6. Message 7. Group
 (b) Explain general model of shared memory programming. **07**
- OR**
- Q.3** (a) Explain need of mutual exclusion for multiprocessing application with code. **07**
 (b) Explain routines for creating, terminating, joining and setting thread attributes for POSIX threads (pthread). **07**
- Q.4** (a) What is P-RAM? Explain assumptions and constraints of it. **07**
 (b) What is conditional variable in pthread? Explain routines for waiting and signaling on conditional variable. **07**
- OR**
- Q.4** (a) What is barrier? Explain purpose of barrier with appropriate example. **07**
 (b) Explain following methods of Message Passing Interface APIs **07**
 1. MPI_Comm_Rank()
 2. MPI_Finalize()
 3. MPI_Init()
- Q.5** (a) What is array processor? Explain SIMD Computer Organization. **07**
 (b) Explain the functionalities of following functions with their parameters. **07**
 semget(), semop()
- OR**
- Q.5** (a) Explain following term with example. **07**
 1. Induction Variable
 2. Loop Splitting
 (b) Explain following process synchronization primitives. **07**
 1. lock_init(lockid)
 2. lock(lockid)
 3. unlock(lockid)
