

**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)

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