

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
MCA - SEMESTER- V EXAMINATION – WINTER 2015

Subject Code: 2650005

Date: 08/12/ 2015

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] (i) Define MPI (01)
(ii) Define Parallel Programming (01)
(iii) What is Latency and Throughput (02)
(iv) How can semaphore be initialized and deleted (02)
(v) What is "Induction Variable"? (01)

- Q.1 [B] List down six Parallel Computers. Explain any one in Details. (07)

- Q. 2 [A] How can we Create and Delete Shared Memory in Parallel Processing?
Explain with Code Snippet. (07)

- Q. 2 [B] what is Array Processor? Explain SIMD Computer Organization. (07)

OR

- Q. 2 [B] Differences between Forward and Backward Dependency with example. (07)

- Q. 3 [A] Differentiate Following Terms: (07)
a. Threads vs. Process.
b. Communication vs. Computation

- Q. 3 [B] Explain Architecture of Parallel Virtual Machine. (07)

OR

- Q. 3 [A] Explain the need of Mutual Exclusion using POSIX Thread (07)

- Q. 3 [B] Explain Generic Compilation Process with Diagram. (07)

Q. 4 [A] What is known as Core? List the example of Chip Multiprocessors.
Explain any one in details. (07)

Q. 4 [B] Explain following Dependences. (07)

- i. Anti dependence
- ii. Output dependence
- iii. Input dependence

OR

Q. 4 [A] Explain the functionalities of following functions with their Parameters.
Semget (), Semop () (07)

Q. 4 [B] what is Barrier? Explain Barriers Mechanism with example. (07)

Q. 5 [A] What is Loop Splitting? Explain Orphan Process with example (07)

Q. 5 [B] Explain Scalability and Performance Portability in Parallel
Programming With example. (07)

OR

Q. 5 [A] Explain “NUMA” Architecture Model in details. (07)

Q. 5 [B] Explain Collective Communication in MPI with help of MPI_Scan (),
MPI_Bcast () and MPI_Barrier () functions. (07)
