

GUJARAT TECHNOLOGICAL UNIVERSITY
MCA - SEMESTER-V • EXAMINATION – SUMMER • 2015

Subject Code: 650005**Date: 08-05-2015****Subject Name: Parallel Programming****Time: 02:30 pm to 05:00 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) Explain the concept and need of parallel programming. **04**
 (b) What is array processor? **03**
 (c) Explain the concept of multithreading and its use in parallel computer architecture? **07**
- Q.2** (a) Explain the need of multiprocessor system. How parallel processing & distributed processing are related? **07**
 (b) What is a dependency graph? Explain WAW, RAW and WAR dependencies **07**
- OR**
- (b) Briefly compare ÷shared memory programmingö and ÷message passingö paradigms on the basis of data sharing and synchronization. **07**
- Q.3** (a) What is loop interchange? How does that help parallel programming? **07**
 (b) What are the sources of performance loss? Discuss different types of overheads associated in the parallel processing. **07**
- OR**
- Q.3** (a) ÷A Pipelining is the way to achieve Parallelismö, How and why? Justify the answer with appropriate diagram and example? **07**
 (b) What is distributed memory? Explain the NUMA Distributed Memory with suitable diagram? **07**
- Q.4** (a) Explain the Amdahl's law for measuring speed up performance with the help of an example. **07**
 (b) Explain following system calls with their functionality and usage in the programming: **07**
 1.)semget
 2.)shmget
 3.)ipcs
 4.)shmctl
- OR**
- Q.4** (a) What are the types of operating systems used for parallel processing? How they are different from the normal OS. **07**
 (b) Explain following system calls with their functionality and usage in the programming: **07**
 1.)semop
 2.)shmctl
 3.)shmat
 4.)semctl
- Q.5** (a) What is parallel virtual machine? Define and draw the basic terminology and architecture of Parallel virtual machine. **07**
 (b) Write a note on histogram commutation? **07**

OR

- Q.5** (a) What is mutual exclusion? What are the major primitives used in programming? **07**
Explain all of them with their syntax?
- (b) Write a note on matrix chain multiplication? **07**
