

Seat No.: _____

Enrolment No. _____

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 ñshared memory programmingò and ñmessage passingò 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) ñA Pipelining is the way to achieve Parallelismò, 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**
