

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

**Subject Code: 650005****Date: 11/05/2016****Subject Name: Parallel Programming****Time: 10:30 AM to 01:00****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) Define the Parallel Programming? Why we need parallel processing? Explain. **07**
- (b) List out the techniques to achieve parallelism in sequential machines. Explain all in brief? **07**
- Q.2** (a) What would be the desirable features of an operating system for a shared-memory multiprocessor? **07**
- (b) Briefly compare “shared memory programming” and “message passing” on the basis of data sharing and synchronization. **07**
- OR**
- (b) Briefly compare “explicit parallel programming” and “implicit parallel programming” on the basis of data sharing and synchronization **07**
- Q.3** (a) What is distributed memory? Explain the NUMA Distributed Memory with suitable diagram? **07**
- (b) What is Multiprocessor? Define its type in details with architecture? **07**
- OR**
- Q.3** (a) What are major sources of performance loss? Explain each in detail. **07**
- (b) “A Pipelining is the way to achieve Parallelism”,\_How and why? Justify the answer with appropriate diagram and example? **07**
- Q.4** (a) What is loop interchange? How does that help parallel programming? **07**
- (b) What is thread and thread based implementation? What do you mean by event and condition variables? **07**
- OR**
- Q.4** (a) What are the advantage and disadvantage of loop-splitting against self-scheduling? **07**
- Q.4** (b) How we can solve a Diophantine Equations in parallel processing environment? Define the process of solution. **07**
- 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? Explain all of them with their syntax? **07**
- (b) Write a note on matrix chain multiplication? **07**

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