

GUJARAT TECHNOLOGICAL UNIVERSITY
MCA - SEMESTER-V • EXAMINATION – WINTER • 2014

Subject Code: 650005**Date: 05-12-2014****Subject Name: Parallel Programming****Time: 10:30 am - 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. | Explain Control and Resource dependency with example. | 02 |
| | ii. | How can we achieve pipeling within the CPU? | 02 |
| | iii. | What are the familiar variations on Heterogeneous chip design of parallel computer? | 01 |
| | iv. | What is Latency and Throughput? | 02 |
| (b) | i. | What is the need of “backward dependency”? Explain with code snippet. | 04 |
| | ii. | Explain the function MPI_Gather() with parameters. | 03 |
- Q.2**
- | | | | |
|-----|-----|--|----|
| (a) | i. | Explain “NUMA” architecture model. | 03 |
| | ii. | Explain crossbar switch interconnection with diagram. | 04 |
| (b) | i. | Give the use of following functions of Dynamic Process Groups. | 05 |
| | | a. pvm_getinst() | |
| | | b. pvm_gettid() | |
| | | c. pvm_gsize() | |
| | | d. pvm_barrier() | |
| | ii. | What is “InductionVariable”? | 02 |
- OR**
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|-----|---|----|
| (b) | How can we create and delete shared memory in parallel processing? Explain with code snippet. | 07 |
|-----|---|----|
- Q.3**
- | | | |
|-----|--|----|
| (a) | Explain following POSIX thread functions with parameter, if any. | 07 |
| | i. pthread_self() | |
| | ii. pthread_join() | |
| | iii. pthread_create() | |
| (b) | Write a short note on classification of pipeline processors. | 07 |
- OR**
- | | | | |
|-----|-----|--|----|
| Q.3 | (a) | Explain groups and communicators and types of communications in message passing interface. | 07 |
| | (b) | Differentiate following terms: | 07 |
| | | a. Threads vs process. | |
| | | b. Communication vs Computation. | |
- Q.4**
- | | | | |
|-----|-----|--|----|
| (a) | i. | Explain loop splitting with example. | 05 |
| | ii. | Which process is called as orphan process? Explain with example. | 02 |
| (b) | | What is the need of mutual exclusion in parallel programming? Explain with code snippet. | 07 |
- OR**
- | | | | |
|-----|-----|--|----|
| Q.4 | (a) | What is known as core? List the example of chip multiprocessors explain any one in detail. | 07 |
| | (b) | What is barrier? Explain barriers mechanism with example. | 07 |
- Q.5**
- | | | |
|-----|---|----|
| (a) | Explain architecture of Parallel Virtual Machine. | 07 |
|-----|---|----|

(b) Explain Generic Compilation Process with diagram. **07**

OR

Q.5 (a) What is array processor? Explain SIMD Computer Organization. **07**

(b) i. Explain Flynn's classification of computer architecture. **03**

ii. What are the sources of performance loss? Explain any one in detail. **04**
