

GUJARAT TECHNOLOGICAL UNIVERSITY**BE SEM-VIII Examination May 2012****Subject code: 180702****Subject Name: Parallel Processing****Date: 12/05/2012****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) Explain pipelining and superscalar execution with suitable example. **07**
 (b) What is the meaning of memory latency? How memory latency can be improved by Cache? **07**

- Q.2** (a) Enlist various decomposition techniques used to achieve concurrency. Explain recursive decomposition with suitable example. **07**
 (b) What is data locality? Explain techniques for maximizing data locality. **07**

OR

- (b) Explain All-to-All Broadcast and All-to-All Reduction with example. **07**

- Q.3** (a) What is parallel system? Enlist various performance metrics for parallel system. Explain SpeedUp in detail. **07**
 (b) Write a note on MPI. **07**

OR

- Q.3** (a) What is isoefficiency function? Derive equation of isoefficiency function. **07**
 (b) Differentiate blocking and non-blocking message passing operations. **07**

- Q.4** (a) Explain following functions with respect to Pthreads API. Also discuss arguments of these functions. **07**
 i. pthread_create()
 ii. pthread_join()
 (b) Explain Cannon's algorithm for matrix multiplication. **07**

OR

- Q.4** (a) Explain the concept of Barrier with suitable example. **07**
 (b) Write a note on Synchronization primitives in POSIX. **07**

- Q.5** (a) Explain Bitonic sort with example. **07**
 (b) Explain Prim's algorithm. **07**

OR

- Q.5** (a) Write and explain Odd-Even Transposition sort Algorithm. **07**
 (b) Explain parallel formulations of Dijkstra's algorithm **07**
