University of Hyderabad, School of Computer and Information Sciences

Parallel Computing
Minor-I

Max. Marks: 20

Date: September 13th, 2013
Duration 60 min.

Note: 1. Attempt **any and only five** questions.
2. Draw neat diagrams, if needed.

Q.1 If $n = 2^m$ numbers stored in an array A of dimension (2n-1) from A[n], A[n+1],..., A[2n-1]. Write a PRAM algorithm to compute prefix sum such that at the end A[i] stores A[1]⊕ A[2]⊕....⊕A[i]. **[4]**

Q.2 Prove that in the Pyramid Network total no. of processors of size k^2 are $(4/3)k^2-(1/3)$. **[4]**

Q.3 Explain how Ahdhal's law is used to obtain speed-up? If 80% of a program's execution time occurs inside a loop that can be executed in parallel. What is the maximum speedup we should expect from a parallel version of the program executing on infinite CPUs? **[4]**

Q.4 Show that a p-processor PRIORITY PRAM can be simulated by a p-processor EREW PRAM with the time complexity increased by a factor of (log n). **[4]**

Q.5 Devise a parallel algorithm for finding *factorial of 'n'* using doubling technique. What is the parallel time and processors complexity? **[4]**

Q.6 List down advantages and dis-advantages of using asymmetrical multi-computers. **[4]**

------Best of Luck------