Uva Wellassa University of Sri Lanka
Faculty of Science and Technology
Department of Computer Science and Technology
300 level 2nd Semester Examination – Sept. / Oct. 2015
CST 326-2 Distributed and Parallel Computing

Uva Wellassa University

Instructions to candidates
Duration: Two (02) hours
Number of questions: five (05) Essay questions
Answers **four(4)** questions only
Mark allocation: 100 (All questions carry equal mark)

1.

a. Describe **Parallel Computing** with aid of a real world example.
(4 mark)

b. Draw the **Flynn Matrix (Flynn Taxonomy)** diagram and explain any two model in it.
(5 mark)

c. Give **three(03)** areas of Science and Engineering that uses parallel computing to model the difficult problem.
(3 mark)

d. Describe the significant differences of **Uniform Memory Access (UMA)** and **Non Uniform Memory Access (NUMA).**
(5 mark)

e. Describe the pros and cons of **Distributed Memory.**
(5 mark)

f. Briefly describe **Hybrid Memory** architecture using a simple diagram.
(3 mark)

2.

a. Describe clearly all the steps of **Parallel Algorithm** designing.
(5 mark)

b. Find the differences between **synchronous** and **asynchronous** parallel algorithms.
(4 mark)

c. Briefly describe any **two (02)** decomposition techniques of **Parallel Algorithm.**
(4 mark)

d. Consider a task finding the average of given set of elements.
   i. Write an sequential algorithm to find the average.
   ii. Write a parallel algortihm to find the average.
   iii. Compare the complexity and performance of sequencial and parallel algorithm written for above questions (i and ii).
(12 mark)

44

3.

a. List all the classification of interconnection network. (4 mark)

b. Describe the use of interconnection network topology. (4 mark)

c. Explain what is meant by Completely Connected Network (CCN). (4 mark)

d. Give any **three (03)** Limited Connected Network (LCN) patterns. (4 mark)

e. Construct a 16 node 3D Mesh Interconnection Network (4 mark)

f.

i. What is a Hypercube interconnection network?

ii. Construct a 4D hypercube interconnection network. (5 mark)

4.

a. Explain how **Distributed System** differs from the **Centralized System.** (5 mark)

b. Give **four (04)** examples for **Distributed System.** (4 mark)

c. Describe what is reliable communication? (3 mark)

d. Describe about Automatic Teller Machine(ATM) Network in Distributed System contetxt. (4 mark)

e. Give **five (05)** common characteristics of Distributed System and describe **three (03)** of them. (4 mark)

f. Give **four (04)** different types of transparency and describe **two (02)** of them. (5 mark)

5.

a. Describe the role of names and name services. (5 mark)

b. Describe how Domain Name System (DNS) works. (3 mark)

c. Give any **three (03)** requirements for name spaces. (6 mark)

g. Briefly describe about Directory and Discovery services. (4 mark)

d. Describe how caching helps to a name service's availability. (7 mark)