04272

MCA (Revised)

Term-End Examination

June, 2010

MCSE-011 : PARALLEL COMPUTING

Time : 3 hours *Maximum Marks : 100*

Note : *Question number **1** is **compulsory**. Attempt **any three** questions from the rest.*

1. (a) What do you understand by parallel processing ? Discuss the various levels of parallelism. **8**

(b) Define the following asymptonic notations used for analysing functions. **8**

(c) Explain visualisation method for evaluating the performance of parallel programs. **8**

(d) Explain the following terms : **8**

(i) Single instruction and single data stream (SISD)

(ii) Single instruction and multiple data stream. (SIMD)

(e) Which issues should be considered while designing an interconnection network ? **8**

2. (a) What are the various parallel programming models ? Discuss each briefly. **10**

(b) Define Bitonic sequence. Discuss a Bitonic sorting algorithm. Further using the algorithm, sort the following sequence. **10**

[15, 17, 19 20, 25, 27, 29, 34, 37, 18, 16, 13, 10, 8, 7, 6, 2]

3. (a) What are the problems faced by super scalar architecture ? How are these problems removed in VLIW architecture. **10**

(b) Using Bernstein's conditions, detach maximum parallelism between the instruction of the following code. **10**

$P_1 : X = Y * Z$

$P_2 : P = Q + X$

$P_3 : R = T + X$

$P_4 : X = S + P$

$P_5 : V = Q \div Z$

4. (a) Explain different compiler directives in openMp in details. **10**

(b) What do you mean by tightly coupled system ? Give its characteristics. **10**

5. (a) Explain the Gustafson's Law for measuring speed up performance with the help of an example. **10**

(b) Explain the concept of Permutation Network with an example. Discuss perfect shuffle permutation and Butterfly permutation. **10**