

07022

MCA (Revised)
Term-End Examination
June, 2011

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) Explain the basic concepts of dataflow computing and describe various applications of parallel computing. 8
- (b) Explain PRAM Model with its components. 8
- (c) Explain Hypercube Network with properties. 8
- (d) Explain Bernstein conditions for detection of parallelism. 8
- (e) Explain the Amdahl's law for measuring speed up performance with the help of an example. 8

2. (a) Flynn's classification is based on multiplicity of instruction stream and data stream observed by CPU during program execution. Explain in detail. **10**
- (b) Discuss the following with respect to a parallel virtual machine. **10**
- (i) Compiling and running of a PVM program.
- (ii) Creating and managing Dynamic process group.
3. (a) Explain the concept of multithreading and its use in parallel computer architecture. **10**
- (b) Give the classification of vector instruction. Explain each. **10**
4. (a) Define array processing. Why are array processors called as SIMD Array computers ? With the help of a Block diagram. Explain the architecture of an SIMD array processor. **10**
- (b) With the help of a diagram illustrate the concept of sorting using comparators for the unsorted list having the elements value as **10**
- (3, 5, 8, 9, 10, 12, 14, 20, 95, 90, 60, 35, 23, 18, 0)

5. (a) A three stage Network is set so that. 10

$$P(S_1) = (0\ 1\ 2\ 3\ 4\ 5\ 6\ 7)$$

$$(2\ 5\ 3\ 7\ 0\ 4\ 6\ 1)$$

$$P(S_2) = (0\ 1\ 2\ 3\ 4\ 5\ 6\ 7)$$

$$(1\ 7\ 0\ 2\ 4\ 6\ 5\ 3)$$

$$P(S_3) = (0\ 1\ 2\ 3\ 4\ 5\ 6\ 7)$$

$$(7\ 5\ 3\ 6\ 4\ 2\ 0\ 1)$$

with permutation realised by Network.

- (b) Define Cluster computing. Explain the memory organisation in a cluster computing. Give details of any of the important project based on cluster computing. 10
