MCSE-011

MCA (Revised)

Term-End Examination

December, 2022

MCSE-011 : PARALLEL COMPUTING

Time : 3 hours   *Maximum Marks : 100*

*Note : Question no. **1** is **compulsory**. Attempt any **three** questions from the rest.*

1. (a) Explain hypercube network and its properties. *10*

   (b) Discuss Bernstein's conditions and its role in parallel computing. *10*

   (c) List and explain the classification of vector processing instructions. Also discuss the efficiency of vector processing over scalar processing. *10*

   (d) List various metrics for performance evaluation of parallel systems. Explain Amdahl's law for measuring speed-up performance of parallel systems. *10*

2. (a) Define Array Processing. Why are array processors called SIMD Array Computers ? Explain the architecture of SIMD array processors. *10*

(b) Explain PRAM Model with its components. *10*

3. (a) Explain the Superscalar architecture. What are its shortcomings that led to development of VLIW architecture ? *10*

(b) Explain the MESH and FAT tree interconnection networks, with the help of a diagram for each. *10*

4. (a) Explain the process of sorting using interconnection networks. Also explain the Odd-Even Transposition algorithm. *10*

(b) Explain various asymptotic notations used for analysing the time complexity of the algorithms. *10*

5. Write short notes on the following : *4×5=20*

(a) Parallel Virtual Machine

(b) SISD and MIMD Computer

(c) RISC and CISC Architecture

(d) Control Flow and Data Flow Computing

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