MCSE-011

MCA (Revised)

Term-End Examination

December, 2021

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) Briefly discuss the following levels of parallel processing. Give suitable examples for each. $4 \times 2\frac{1}{2} = 10$

    (i)   Instruction level

    (ii) Loop level

    (iii) Procedure level

    (iv) Program level

   (b) Explain Flynn's classification of computers in detail, with diagrams.   *10*

   (c) Explain the concept of Permutation network. Give suitable example.   *10*

   (d) Discuss the term 'pipeline processing'. How do Instruction pipelines differ from Arithmetic pipelines ?   *10*

2. (a) What are superscalar processors ? Briefly discuss the problems of superscalar architecture. How do VLIW architectures solve the problem of superscalar architectures ? *10*

(b) Write the Bitonic Sort algorithm to sort a bitonic sequence. Apply the algorithm to sort the unsorted list given below : *10*

{3, 5, 8, 9, 10, 12, 14, 20, 95, 90, 60, 40, 35, 23, 18, 0}

3. (a) Explain Gustafson's Law with suitable example. *10*

(b) Compare Grid computing and Cluster computing. *10*

4. (a) What is a Parallel Virtual Machine (PVM) ? Explain the steps for compiling and running the PVM program. *10*

(b) What is grain size ? What are the different categories of grain size ? How do we classify Parallelism on the basis of grain size ? *10*

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

(a) Hyper Cube

(b) PRAM

(c) Shared Memory Programming

(d) Handler's Classification