| **MCSE-011**

MCA (Revised)

Term-End Examination

February, 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) Differentiate between Concurrent and Parallel executions. What do you understand by the granularity of a parallel system ? *5*

   (b) Briefly discuss the classification of parallel computers on the basis of the structure of the computers. *5*

   (c) What do you understand by Permutation Networks in parallel computing ? *5*

   (d) Compare Vector processing and Array processing. *5*

   (e) What is Bitonic sequence ? Write an algorithm for sorting the bitonic sequence. *5*

(f) Discuss the shared memory model for parallel programming. *5*

(g) What are the sources of overheads in parallel computers ? Briefly discuss them. *5*

(h) Explain the term Parallel Virtual Machine (PVM). *5*

2. (a) Discuss the concept of Data parallelism with suitable example. *5*

(b) What are the primary attributes used to measure the performance of a computer system ? *5*

(c) Compare Tightly coupled systems with Loosely coupled systems. *5*

(d) What is Pipeline Processing ? What is the purpose of using latches in the pipelined processor ? *5*

3. (a) Draw a block diagram of PRAM model. Discuss the components of PRAM model. Write the steps followed by PRAM model while executing an algorithm. *10*

(b) Briefly discuss the shared memory model for parallel programming. Write a shared memory program to process marks of students. Your program should take the roll number and the marks of the student in four subjects as input, and find the grade of the student. *10*

4. (a) What is Wait protocol for synchronization ? Compare Busy-wait and Sleep-wait protocols. *5*

(b) Write Gustafson's law. Discuss in detail Gustafson's law. Your discussion should include relevant diagram, graphs and mathematical expression. *10*

(c) Briefly discuss the Intel Architecture-64 (IA-64). *5*

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

(a) Flynn's classification

(b) Superscalar processors

(c) VLIW Architecture

(d) Data flow computing

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