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MCSE-011

MASTER OF COMPUTER APPLICATIONS (MCA) (REVISED)

Term-End Examination

June, 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) Explain Bernstein's condition and determine the parallelism in the following segment : 10

$S_1 : X = Y + Z$

$S_2 : Z = U + V$

$S_3 : R = S + V$

(b) Differentiate between Temporal Parallelism and Data Parallelism. Give example for each. Also, explain the concept of 'speed up'. 10

(c) Discuss any ***five*** issues, which should be considered while designing an interconnection network. 10

(d) Explain vector processing and discuss the classification of vector instructions, with suitable example for each. 10

2. (a) Explain Associative Array Processing. Discuss the role of associative memory in this type of processing, and differentiate between 'Fully Parallel Associative Processor' and 'Bit Serial Associative Processor'. 10

(b) Compare CRCW and CREW. Write matrix multiplication algorithm using both CRCW and CREW. 10

3. (a) Discuss the term message passing programming. Give merits and demerits of message passing programming. 10

   (b) Explain the following : 10

   (i) Amdahl's law

   (ii) Sun and Ni's law

4. (a) Briefly discuss the data structures for parallel algorithms. Give example for each. 10

   (b) Discuss the working of odd-even merging circuit and illustrate its usage to perform merge sort. 10

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

   (a) Analysis of Bitonic sort

   (b) Analysis of Merge sorl

   (c) Odd-Even Transposition algorithm

   (d) UNIX for multiprocessor system