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MCSE-011

MCA (Revised)

Term-End Examination

MCSE-011 : PARALLEL COMPUTING

Time : 3 Hours] *[Maximum : Marks : 100*

Note: Question number 1 is compulsory. Answer any three questions from the rest.

1. (a) Explain the life cycle of process. What are the advantages of threads over processes. 5

(b) Briefly discuss the classification of parallel computers on the instruction and data streams. 5

(c) List the parameters on the basis of which, the performance of interconnection networks are measured. 5

(d) Differentiate between Instruction pipelines and Arithmatic pipelines. 5

(e) Briefly discuss the concurrently read Concurrently Write model of computation. What is the advantage of this model? 5

(f) Desribe the Message passing model for parallel programming. Give suitable example in support of your description. 5

(g) Write Amdahl's law. Mention the major shortcoming identified in Amdahl's law. 5

(h) What is Hyper-Threading Technology (HTT)? Write salient features of HTT. 5

2. (a) Compare concurrent environment with Parallel environment. 5

(b) Discuss the concept of Temporal parallelism with suitable example. 5

(c) Write Bernstein conditions for delection of parallelism. 5

(d) List the issues which should be considered while designing an interconnection network 5

3. (a) Briefly, discuss the combinational circuit for sorting the strings. Write the algorithm to sort the bitonic sequence, and analyse the complexity of this algorithm.

(b) Explain the following data structures for parallel algorithms: 10

(i) Linked List

(ii) Hypercube Networks

4. (a) What is sole access protocol? Briefly discuss the methods used for synchronization in this protocol. 5

(b) Discuss the following metrics, involved for the analysis of the performance of parallel algorithms for parallel computers. 10

(i) Running time

(ii) Efficiency

your discussion should include relevant diagram, graph and methematical expressions.

(c) What is Grid computing? How it is different from cluster computing? 5

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

(a) Gustafson's law

(b) Merge sort circuit

(c) Associative Array processing

(d) Handler's classification

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