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MCSE-011

10447

MCA (Revised)

Term-End Examination

December, 2010

MCSE-011 : PARALLEL COMPUTING

Time : 3 hours *Maximum Marks : 100*

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

1. (a) What are various primitives message passing ? Explain various primitives of message passing. 8

   (b) Explain the Amdahl's law for measuring speed up performance, with the help of an example. 8

   (c) Explain the Benstein parallelism conditions which are used to determine whether the statement are parallel or not, with the example. 8

   (d) Explain PRAM Model with its components. 8

   (e) Explain the various levels of parallel processing. 8

2. (a) Define Array processing. Why are array processors called as SIMD array computers ? With the help of a block diagram, explain the architecture of an SIMD array processor. 10

(b) Discuss the following with respect to a parallel virtual machine. 10

(i) Compiling and running of a PVM program.

(ii) Creating and managing Dynamic process group.

3. (a) Identify the types of the following vector processing Instructions. 10

(i) C (I) = A (I) AND B (I)

(ii) C (I) = MAX (A (I), B (I))

(iii) B (I) = A (I)/S, where S is a scalar item.

(iv) B (I) = SIN (A(I))

(v) C (I) = SIN (A(t))/COS (A (r))

(b) Explain in detail, several parallel programming models. 10

4. (a) Define cluster computing. Explain the memory organisation in a cluster computing. Give details of any of the important protect based on cluster computing. **10**

(b) Explain the Handler's classification based on three distinct levels of computer Processor Control Unit (PCU), Arithmetic Logic Unit (ALU), Bit Level Circuit (BLC), **10**

5. (a) Explain the operations in the following message passing operating system models. **10**

(i) Object oriented model.

(ii) Node addressed model.

(iii) Channel addressed model and also explain various multi-processor Execution Nodes.

(b) Explain Bens/Benz Network. Show the inter connection of Bens /Benz Network for the following permutations. **10**

$$P = \begin{bmatrix} 0 & 1 & 2 & 3 & 4 & 5 & 6 & 7 \\ 2 & 3 & 4 & 0 & 1 & 6 & 7 & 5 \end{bmatrix}$$