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B. E. (Seventh Semester) Examination,

April-May 2020/NOV-DEC 2020

(New Scheme)

(CSE Branch)

PARALLEL PROCESSOR & COMPUTING

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : Attempt all the questions. Part (a) from each question is compulsory. Attempt any two parts from parts (b), (c) and (d) of each question.

Unit-I

1. (a) What is Moore's law?

2

- (b) Explain Amdahl's law and make an analysis about performance of a parallel computer by doubling and tripling number of processors for computing. 7
- (c) Write a detail notes about architectural classification schemes. 7
- (d) Write short notes on : 7
 - (i) Parallel processing in memory
 - (ii) Parallel algorithms

Unit-II

- 2. (a) What do you mean by Pipeline hazards? 2
- (b) Explain data and control dependency create a dependency graph for following set of instructions and find which instructions can be executed in parallel. 7

$$I_1 : C = D \times E$$

$$I_2 : M = G + C$$

$$I_3 : A = B + C$$

$$I_4 : C = L + M$$

$$I_5 : F = G \div E$$

- (c) Explain VLIW computers in detail. 7
- (d) Write short notes on : 7
 - (i) Data-flow computers
 - (ii) Non-linear pipeline and reservation table

Unit-III

- 3. (a) What is torus? 2
- (b) Explain PRAM and its application in detail. 7
- (c) Explain Bitonic sorting algorithm with suitable example. 7
- (d) Write short notes on any **two** : 7
 - (i) Wormhole Routing
 - (ii) Shared-memory Algorithms
 - (iii) Shuffle and Shuffle-Exchange Network

Unit-IV

- 4. (a) What do you mean by distributed shared memory? 2
- (b) Explain concept of multith reading and latency hiding in detail. 7

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- (c) Describe functions and applications of parallel operating systems. 7
- (d) Write short notes on : 7
- (i) Emulations for processor architectures
 - (ii) Fault-level methods

Unit-V

5. (a) What do you mean by CC-NUMA? 2
- (b) Explain shared-memory MIMD machines with the help of architectural diagram. 7
- (c) Explain vector-parallel cray Y-MP architecture with the help of diagram. 7
- (d) Write short notes on : 7
- (i) Data-parallel SIMD machines
 - (ii) Processor and memory technologies