Printed Page:- Subject Code:- AMTCSE0201

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

M.Tech.

SEM: II - THEORY EXAMINATION (2021 - 2022)

Subject: High Performance Computing

Time: 3 Hours Max. Marks: 70

General Instructions:

1. The question paper comprises three sections, A, B, and C. You are expected to answer them as directed.
2. Section A - Question No- 1 is 1 marker & Question No- 2 carries 2 marks each.
3. Section B - Question No-3 is based on external choice carrying 4 marks each.
4. Section C - Questions No. 4-8 are within unit choice questions carrying 7 marks each.
5. No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

SECTION A 15

1. Attempt all parts:-

1-a. Memory system performance is largely captured by_ (CO1) 1

(a) Latency

(b) bandwidth

(c) both latency and bandwidth

(d) none of above

1 A term for simultaneous access to a resource, physical or logical. (CO2) 1

(a) Multiprogramming

(b) Multitasking

(c) Threads

(d) Concurrency

1-c. Generalization of broadcast in Which each processor is ----------.(CO3) 1

(a) Source as well as destination

(b) only source

(c) only destination

(d) none

1-d. Which of the following is not an application of Breadth First Search? (CO4) 1

(a) When the graph is a Binary Tree

(b) When the graph is a Linked List

(c) When the graph is a n-ary Tree

(d) hen the graph is a Ternary Tree

1-e. which of the following are methods for containing interaction overheads.(CO5) 1

(a) maximizing data locality

(b) minimize volumn of data exchange

(c) min frequency of interactions

(d) all the above

2. Attempt all parts:-

2.a. What is accelerator? (CO1) 2

2.b. What is the latency? (CO2) 2

2.c. What is the workpool? (CO3) 2

2.d. Define Serial program? (CO4) 2

2.e. Define the CPU utilization? (CO5) 2

SECTION B 20

3. Answer any five of the following:-

3-a. Explain Scope of Parallel Computing? (CO1) 4

3-b. What is the application of parallel Computing? (CO1) 4

3-c. Define the cache-coherence? (CO2) 4

3-d. Explain the reasons for cache-coherence? (CO2) 4

3.e. Define the tree data structure. Explain with example? (CO3) 4

3.f. Compare the SPMD and MPMD? CO4 4

3.g. What is performance? Explain how to measure the performance? CO5 4

SECTION C 35

4. Answer any one of the following:-

4-a. Explain Multi-Core architecture? (CO1) 7

4-b. What are different decomposition techniques? Explain in details. (CO1) 7

5. Answer any one of the following:-

5-a. Define the register to register architecture? (CO2) 7

5-b.	Discuss the difference between super computer and general computer? (CO2)	7
6. Answer any one of the following:-		
6-a.	Explain the need for parallel processing in engineering design and automation. (CO3)	7
6-b.	What are principles of Message Passing Programming. (CO3)	7
7. Answer any one of the following:-		
7-a.	Explain in detailed partitioning Global Address Space PGAS language? Explain. (CO4)	7
7-b.	What is Scheduler? Explain the Task scheduling.(CO4)	7
8. Answer any one of the following:-		
8	Write down a basic How will you define interconnection communication between these processes? (CO5)	7
8	What are different ways to map a set of processes to a two-dimensional grid? (CO5)	7