Printed Page:-03 **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 (2024 - 2025)

Subject: High Performance Computing

Time: 3 Hours **Max. Marks: 70**

General Instructions:

IMP: *Verify that you have received the question paper with the correct course, code, branch etc.*

1. *This Question paper comprises of* ***three Sections -A, B, & C.*** *It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.*

2. *Maximum marks for each question are indicated on right -hand side of each question.*

3. *Illustrate your answers with neat sketches wherever necessary.*

4. *Assume suitable data if necessary.*

5. *Preferably, write the answers in sequential order.*

6. *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. Pipe-lining is a unique feature of _____. (CO1 K1) 1

(a) 1. RISC

(b) 2. CISC

(c) 3. ISA

(d) 4. IANA

1-b. In the Pipelined Execution, steps contain (CO2 K1) 1

(a) 1. normalization

(b) 2. communication

(c) 3. elimination

(d) 4.all

1-c. _____ algorithms use a heuristic to guide search. (CO3 K1) 1

(a) 1. BFS

(b) 2. DFS

(c) 3. BFS and DFS

(d) 4. none of above

1-d. In most of the cases, topological sort starts from a node which has _____ (CO4 K1) 1

(a) 1. Maximum Degree

(b) 2. Minimum Degree

(c) 3. Any degree

(d) 4.Zero Degree

1-e. Multithreading allowing multiple-threads for sharing the functional units of a..... (CO5 K1) 1

(a) 1. Multiple processor

(b) 2. Single processor

(c) 3. Dual core

(d) 4.Corei5

2. Attempt all parts:-

2.a. Define the Data parallel method. (CO1 K1) 2

2.b. Explain the Master slave relationship. (CO2 K1) 2

2.c. Discuss NUMA with suitable example. (CO3 K2) 2

2.d. Explain concurrency with suitable example. (CO4 K3) 2

2.e. Describe the disk-usage. (CO5 K2) 2

SECTION-B 20

3. Answer any five of the following:-

3-a. DIscuss network with its types also discuss suitable example. (CO1 K3) 4

3-b. Explain basic working principle of VLIW Processor with suitable diagram. (CO1 K3) 4

3-c. Define the shared-memory multi processors with suitable example. (CO2 K1) 4

3-d. Explore vector processing with suitable example. (CO2 K3) 4

3.e. Discuss AVL tree explain it with an example. (CO3 K3) 4

3.f. Explain the Scheduling with suitable example. also list out the types of Schedulers. (CO4 K3) 4

3.g. Explore performance with suitable examples also discuss its value. (CO5 K3) 4

SECTION-C 35

4. Answer any one of the following:-

4-a. Explain the dataflow model with suitable examples and diagram. (CO1 K3) 7

4-b. Explore Multithread Architecture with suitable example. (CO1 K3) 7

5. Answer any one of the following:-

5-a. Write down the steps in the vector instruction format also explain every step in details. (CO2 K3) 7

5-b. Discuss the super computer with suitable example. (CO2 K3) 7

6. Answer any one of the following:-

6-a. Explain the working of Irvine data flow computer. (CO3 K3) 7

6-b. Discuss various applications of Parallel Computing with suitable real time example. (CO3 K2) 7

7. Answer any one of the following:-

7-a.	Explore Task-dependency graph with suitable example. (CO4 K3)	7
7-b.	Explain SPMD and its I/O & file systems. (CO4 K3)	7

8. Answer any one of the following:-

8-a.	Describe processor architecture in details also explain Flynn's taxonomy. (CO5 K3)	7
8-b.	Explain IBM CELL BE architecture with the help of diagram. (CO5 K3)	7

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