Roll No: | | | | | | | | | | | |

PRESIDENCY UNIVERSITY

GAIN MORE KNOWLEDGE
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Presidency University Act, 2013 of the Karnataka Act No. 41 of 2013 | Established under Section 2(f) of UGC Act, 1956
Approved by AICTE, New Delhi | Approved By BCI
Bengaluru

Mid Term Examinations - October 2026

Date: 06/10/2026 **Time:** 02:00 PM - 03:30 PM

Course Code: CSI2000 **Course Name:** High Performance Computing

Semester: Seventh Semester **Max. Marks:** 50 **Weightage:** 50%

CO - Levels	CO1	CO2
Marks	46	44

PART A: Answer Following Questions. 10 M

Q.N.	Questions	M	CO	BT
1	State any two reasons why increasing processor clock speed cannot continue indefinitely.	2	CO1	BT1
2	What is Flynn's Taxonomy?	2	CO1	BT1
3	Explain the different types of parallelism.	2	CO1	BT1
4	A cluster has 6 nodes, each with 12 CPU cores. If 54 cores are currently being used, calculate the CPU utilization percentage.	2	CO2	BT3
5	What is meant by low-cost computing in HPC?	2	CO2	BT2

PART B : Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
6	Explain parallel computing and discuss why it became necessary with the evolution from single-core to multicore processors. Explain the major eras of computing leading to HPC.	10	CO1	BT2
7	Explain SIMD architecture with a suitable diagram. Describe how SIMD performs the same operation on multiple data elements and discuss any four HPC applications.	10	CO1	BT2

PART C: Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
8	Explain the Network of Workstations (NOW) approach and discuss how a collection of networked computers can be used to provide high computational performance at relatively low cost.	10	CO2	BT2
9	Explain the working of a pipelined processor. Discuss the important conditions required for parallel execution and explain how pipelining improves instruction execution.	10	CO1	BT2

PART D: Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
10	Explain the program flow mechanisms used in parallel computing. Discuss sequential flow, branching flow and loop flow with suitable examples.	10	CO1	BT2

11	Explain Single System Image (SSI) in detail and also draw diagram. Discuss services such as single login, single file system, single job queue, single process space and single user interface.	10	CO2	BT2

PART E: Answer Any 1 Following Questions. 10 M				
Q.N.	**Questions**	**M**	**CO**	**BT**
12	Explain resource management and scheduling in HPC with suitable diagram. Discuss how CPU, memory, storage, GPU and network resources are managed among different users and applications.	10	CO2	BT2
13	Explain the concept of scalable parallel computing with suitable diagram. Discuss how scalable architectures support increasing computational requirements in HPC systems.	10	CO2	BT2