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Seventh Semester B.E./B.Tech. Degree Examination, June/July 2026

Parallel Computing

Time: 3 hrs.

Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.

2. M : Marks , L: Bloom's level , C: Course outcomes.



Module – 1			M	L	C
Q.1	a.	Define parallel computing. Why we need ever increasing performance? Explain with an example.	10	L2	CO1
	b.	Briefly explain SIMD system.	10	L2	CO1
OR					
Q.2	a.	Explain the two main types of MIMD systems.	10	L2	CO1
	b.	What is cache coherence? Explain two main approaches to insuring cache coherence.	10	L2	CO1
Module – 2					
Q.3	a.	Write a note on speed up and efficiency in MIMD systems.	10	L2	CO2
	b.	What is the need of Amdahl's law? Explain the Amdahl's law.	10	L2	CO2
OR					
Q.4	a.	Briefly explain scalability in MIMD systems. Explain GPU performance.	10	L2	CO2
	b.	Explain with an example for taking timings of MIMD programs.	10	L2	CO2
Module – 3					
Q.5	a.	List and explain MPI-functions with an example.	10	L2	CO3
	b.	Illustrate the trapezoidal rule in MPI with the pseudocode.	10	L2	CO3
OR					
Q.6	a.	Briefly explain MPI derived data types with an example.	10	L2	CO3
	b.	Briefly explain collective communication and also differentiate between collective communication and point to point communication.	10	L2	CO3
Module – 4					
Q.7	a.	Explain Reduction Clause in OpenMP.	10	L2	CO4
	b.	Explain scheduling loops in OpenMP.	10	L2	CO4

OR					
Q.8	a.	Discuss parallel for directives in detail.	08	L2	CO4
	b.	Explain the concept of producer consumer problem using OpenMP. Give functions to explain the message passing using OpenMP.	12	L2	CO4
Module – 5					
Q.9	a.	Write a note on GPU architecture and also differentiate between GPU's and GPGPU's.	10	L2	CO5
	b.	Explain Threads, blocks and grids Nvidia compute capabilities and device architecture.	10	L2	CO5
OR					
Q.10	a.	Illustrate cuda trapezoidal rule-I with suitable example.	10	L2	CO5
	b.	State Cuda trapezoidal rule-II and explain briefly along with improving performance.	10	L2	CO5
