

Seat No.:	Q. Paper Code: FTC-A-017			SET	A		
	Fabtech Technical Campus, College of Engineering & Research, Sangola						
	(An Autonomous Institute)						
	Computer Science and Engineering						
	Academic Year: -2025-26, Semester-I						
GPU programming and CUDA (25PCS11271)							
Regular End Semester Examination Winter 2025-26 [Dec./Jan]							
Class:	F. Y. M. Tech.	Day & Date:	Wednesday 07/01/2026				
Duration:	03 Hrs.	Max. Marks:	60 Marks				
Time:	11:00 AM TO 02:00 PM						
Instructions:							
1) All Questions are compulsory. 2) Figures to the right indicate full marks. 3) Draw neat diagram wherever necessary. 4) Make suitable assumptions if necessary and state it clearly. 5) Use of non-programmable calculator is allowed.							
Q. No.	Questions				Marks	CO	BL
Q. 1	Attempt any two of the following				12		
1	Explain the key advantages of using GPUs for parallel computing				6	1	2
2	Illustrate with example the concept of parallel computing and how does it help in improving computational performance				6	1	2
3	Discuss some common applications of GPGPU in Computer Science and Engineering (CSE)				6	1	2
Q. 2	Attempt any two of the following				12		
1	Differentiate between a thread, block, and grid in CUDA				6	2	3
2	Explain the memory hierarchy in CUDA programming. Describe the different types of memory available in CUDA.				6	2	2
3	State and explain the purpose of shared memory in CUDA, and how does it differ from global memory				6	2	2
Q. 3	Attempt any two of the following				12		
1	State and explain role of shared memory in CUDA, and how does it help with performance optimization				6	3	2
2	Discuss bank conflicts in shared memory, and how can they be minimized				6	3	2
3	Elaborate on latency hiding in CUDA and its impact on improvement of performance				6	3	3

Q. 4	Attempt any two of the following	12		
1	Give examples of Pinned Memory in CUDA and its impact	6	4	2
2	Discuss CUDA Unified Memory and how is it used to simplify memory management	6	4	2
3	Explain main advantages and limitations of CUDA Unified Memory	6	4	2
Q. 5	Attempt any two of the following	12		
1	Explain with example how cuBLAS, cuFFT, and cuDNN differ in terms of their applications and use cases	6	5	3
2	Use CUDA libraries like cuBLAS in Python code and explain how it can be used in python	6	5	3
3	Describe PyCUDA, and how does it simplify GPU programming with CUDA in Python	6	5	2