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|  | **Department of Artificial Intelligence & Data Science** |

**Parallel Programming with CUDA Laboratory**

ADL57(R)

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| **Credits:** 0:0:1  **Semester:** V | **Marks: 50** | **Term: OCT 2024 – Jan 2025** |

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| **OpenMP Programs** | | |
| **SL. No.** | **Questions** | **CO mapping** |
|  | Write an OpenMP program to calculate the value of PI using the critical section. | 1, 2 |
|  | Write an OpenMP program to print parallel programming environment information. | 1, 2 |
|  | Write an OpenMP program to add two arrays in parallel using dynamic clause and defining chunk size. | 1, 2 |
| 4. | Write an OpenMP program to add and subtract two arrays with two different threads ( Work sharing – Using section clause). | 1, 2 |
| 5. | Write an OpenMP program to find the sum of array elements by demonstrating usage of Reduction clause.  ( sum = sum + a[i]) |  |
| 6. | Write an OpenMP program to perform matrix multiplication. | 1, 2 |
| 7. | Write an OpenMP program to find the largest element in an array. Demonstrate it using critical section. Also verify if the answer is correct by implementing serial calculation and finally comparing both the results. | 1, 2 |

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| **CUDA Programs** | | |
| **SL. No.** | **Questions** | **CO** |
|  | Write a CUDA program to add 2 numbers. | 4, 5 |
|  | Write a CUDA program to perform vector addition. | 4, 5 |
|  | Write a CUDA program to perform matrix addition. | 4, 5 |
|  | Write a CUDA program to print information about the device. | 4, 5 |
|  | Write a CUDA program to perform matrix multiplication. | 4, 5 |
| 6 | Write a CUDA program to perform dot product on two vectors. | 4, 5 |
| 7. | Write a CUDA program to print “Welcome to Parallel Programming” N times as defined by user. Students need to vary the threads-per-block and block-per-cluster as per the input. | 4, 5 |