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| Department of Computer Science & Engineering |
| Pre-requisite Questioner on Courses: Data Structures and Design and Analysis of Algorithms |
| M.Tech First Semester Course: Advances in Algorithms  Course code: CST 503 (Compulsory Course) |

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| SET – 1 | |
|  | Matrix Operations: Demonstrate logic for: |
|  | 1. Scanning the matrix row-wise: 10, 20, 30, 40, 50 .. |
|  | 1. Scanning the matrix column – wise: 10, 50, 90, 35 |
|  | 1. Scanning the matrix lower-triangular and upper-triangular: 50, 15, 25, 90, 55 |
|  | 1. Scanning the matrix: snake scan, reverse snake scan: 10, 50, 90, 35, 55 OR 10,20,30, 40, 80, 70 |
|  | 1. Find an element: should be smallest in row and largest in column after scanning |
|  | 1. Find second largest element and second smallest element |
|  | 1. Perform operation: Find smallest element from row and perform subtraction with all elements. |
|  | 1. Divide the matrix into four equal parts and generate sum of each part. Print the component with largest and smallest sum. (Take large matrix) |
|  | 1. Swap the rows with column and vice – versa |
|  | 1. Swap upper triangular and lower triangular matrix |
|  | 1. Find a combination in matrix (set of numbers) such that the sum results in a number |
|  | 1. Complexity of matrix addition, multiplication. |

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|  | **Example:** |

10 20 30 40

50 60 70 80

90 15 65 75

35 55 25 95

**Expected Outcome:**

The presentation should include:

1. Logic of solution and implementation algorithm (not in code)
2. Complexity equation of logic