

**GIET UNIVERSITY, GUNUPUR – 765022**  
**B. Tech –2nd Semester (2024-2025): ASSIGNMENT**  
**BESBS 2040- Data Structures and Algorithms**  
**ASSIGNMENT-I**

<b>Date of issue:</b>	<b>SECTION: FOR ALL SECTIONS</b>
<b>Date of submission:</b>	<b>Each question carries 5 marks</b>

1.	Write an algorithm to sort a list of elements present in an array X[10] in ascending order.	CO1/PO1
2.	What is row-major order and column-major order? Given a matrix Q[7][8] having base address 1000. If the size of each memory is 4 bytes, and we need to find the address of Q[[4][3]] then find the address in row-major order and also in column-major order.	CO3/PO2
3.	Write down the algorithm to test a matrix is sparse or not. If sparse how to store the matrix non-zero elements information into another 3-columnar matrix.	CO3/PO3
4.	Write down the algorithm to perform PUSH and POP operations on a given stack using an array.	CO3/PO3
5.	Write down the algorithm to convert a given infix expression into equivalent postfix notation using stack.	CO2/PO2
6.	Given infix expression $Q = A - S / D + (E * F^G) - H$ Find its equivalent postfix using stack.	CO3/PO3
7.	Given two arrays A[5] and B[7] having elements in ascending order. Design an algorithm to apply merging operation on both arrays and generate the resultant list into array C[12] in ascending order.	CO3/PO3
8.	Write down the algorithm to evaluate a given postfix expression using stack.	CO2/PO2
9.	Given a stack STK[SIZE] where SIZE=4. Initially the TOP= -1. Apply the below list of operations on the stack and elaborate the execution process in detail. PUSH(10), PUSH(20), POP(), PUSH(30), PUSH(40), PUSH(50), PUSH(60), POP(), POP(), POP(), PUSH(70).	CO3/PO3
10.	Given a list of elements from LB to UB in an array A[100]. Write two algorithms to perform: a) Insertion of an item at a specific location b) search for a given item	CO3/PO3