

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

## School of Computing Science and Engineering

Master of Computer Applications  
Mid Term Examination - May 2024

Duration : 90 Minutes  
Max Marks : 50

### Sem II - E1PY203B - Data Structures

General Instructions

Answer to the specific question asked

Draw neat, labelled diagrams wherever necessary

Approved data hand books are allowed subject to verification by the Invigilator

- 1) How can you represent a sparse matrix in memory? K2 (2)
- 2) What do you mean by the complexity of an algorithm? K1 (3)
- 3) What is data structure? What are the factor that influence the choice of a particular data structure? K2 (4)
- 4) Suppose a company keeps a linear array YEAR(1920:1970) such that YEAR[k] contains the number of employees joined in year K. write a module to print each of the year in which no employee joined the company. K2 (6)
- 5) If A=22, B=6, C=5 and D=25. What is the value of postfix expression ABC+/D\* ? K3 (6)
- 6) What is stack ADT? Construct stack ADT using dynamic memory allocation methods with following operations/ checks methods on it. I) Insert II) Delete III) Empty IV) Full K3 (9)
- 7) Define BT and Complete BT with example. Consider following inorder and preorder traversal of BT. Preorder : GBQACKFPDERH Inorder: QBKCFAGPEDHR, draw the original tree. K4 (8)
- 8) Write down the iterative and recursive algorithm for In-order traversal of a BT. what is the run-time of the algorithm? K4 (12)

**OR**

Write an algorithm to convert an expression written in infix into a postfix. Show the trace of the algorithm for the following expression: Q : (A-B)\*(C/D)+E K4 (12)