Roll No.							

25-CS-22

M.Sc. II SEMESTER [MAIN/ATKT] EXAMINATION
MAY - JUNE 2025

COMPUTER SCIENCE

Paper - II

[Data Structure Using C++]

[Max. Marks : 75] *[Time : 3:00 Hrs.]* *[Min. Marks : 26]*

Note : Candidate should write his/her Roll Number at the prescribed space on the question paper.
Student should not write anything on question paper.
Attempt all five questions. Each question carries an internal choice.
Each question carries **15 marks.**

Q. 1 a) Explain the concept of Object Oriented Programming (OOP) in C++ ? **(10 marks)**

b) Describe abstract data type, with example. **(05 marks)**

OR

a) Define data structure and explain classification of data structure in detail. **(10 marks)**

b) Explain the concept of sparse matrices ? **(05 marks)**

Q. 2 a) What is a Stack ? Evaluate the expression 562 + * 142 / in tabular form showing stack after every step. **(10 marks)**

b) List the applications of linked lists ? **(05 marks)**

OR

a) What is Queue ? How can you insert and delete an element in a queue ? **(09 ma**

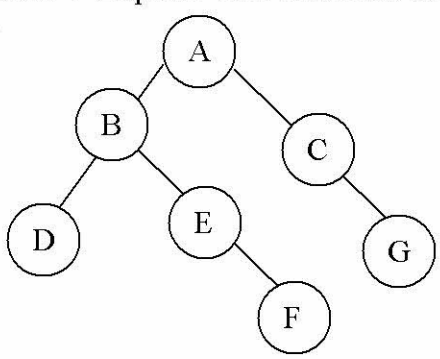
b) What is Doubly Linked List ? Explain. **(06 marks)**

Q. 3 a) What is Graph ? Explain the different ways to traverse a graph ? **(10 marks)**

b) Explain AVL tree ? **(05 marks)**

OR

a) Define Binary Tree ? Explain tree traversal techniques and perform on the following tree - **(10 marks)**



P.T.O.

b) What is Weighted Graph ? Explain. **(05 marks)**

Q. 4 a) What is Time Complexity ? Explain the terms best case, average case and lowest case. **(08 marks)**

b) Explain the concept of Recursion with a suitable example ? **(07 marks)**

OR

Explain the following in brief - **(05 marks each)**

i) Hash Function.

ii) Big-Oh notation

iii) Divide and conquer algorithm.

Q. 5 a) Explain quick sort with the help of an example ?

b) What is Sequential Search ? Write an algorithm for sequential search ?

OR

a) What is Selection Sort ? Write an algorithm for selection sort ?

b) What is Binary Search ? Write an algorithm for Binary Search ?