No. of Printed Pages : **2**

21BCA2C4DSL

B.C.A. II Semester Degree Examination, September/October - 2023

COMPUTER SCIENCE

Data Structures using C

(NEP)

Time : 2 Hours Maximum Marks : 60

SECTION - A

1. Answer the following sub-questions. Each sub-question carries **one** mark. **10x1=10**

(a) Define data structure.

(b) Write any two dynamic memory allocation methods.

(c) Mention the different types of arrays.

(d) Give an example of a sparse matrix.

(e) Define doubly linked list.

(f) Write the structure of a node in singly linked list.

(g) Give an example of prefix notation.

(h) Define queue.

(i) What is a root node ?

(j) What is a complete binary tree ?

SECTION - B

Answer **any four** of the following questions. Each question carries **five** marks. **4x5=20**

2. Write the differences between static memory allocation and dynamic memory allocation.

3. Explain the representation of a two-dimensional array in memory.

4. Write an algorithm for sequential (linear) search.

5. Write a short note on garbage collection.

6. Write the algorithms for PUSH and POP operations in a stack.

7. Describe array representation of a binary tree.

P.T.O.

SECTION - C

Answer **any three** of the following questions. Each questions carries **ten** marks. **3x10=30**

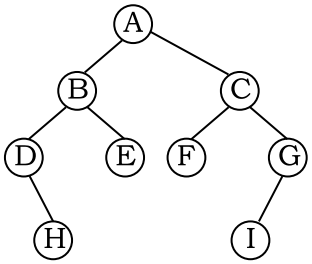
8. What is recursion ? Write a program to find GCD using recursion.

9. Explain bubble sort with an example.

10. Write an algorithm to add a new node at the beginning of a singly linked list.

11. Explain operations on queues.

12. Write preorder, inorder and post order traversal for the following binary tree.



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