II Semester B.C.A. Degree Examination, October/November 2022

(NEP Scheme)

COMPUTER APPLICATION

CAC 04 : Data Structures Using C

Time : 2½ Hours

Max. Marks : 60

Instruction : *Answer **all** the Sections.*

SECTION – A

I. Answer **any 6** questions. **Each** question carries **2** marks. **(6×2=12)**

1) What are primitive data structures ? Give an example.

2) What is static memory allocation ?

3) Mention any two advantages of recursion.

4) Explain the memory representation of two dimensional array.

5) Mention the advantages of linked list.

6) What is the difference between infix and postfix expression ?

7) What are the operations performed on queues ?

8) Define height of a binary tree.

9) Mention the applications of trees.

SECTION – B

II. Answer **any 4** questions. **Each** question carries **6** marks. **(4×6=24)**

10) What is a linear data structure ? Explain the different operations performed on linear data structures.

11) Write a recursive program to find the GCD of two numbers.

12) Write an algorithm for insertion sort method.

13) Explain the memory representation of stack using one dimensional array.

14) Write a note on different types of queues.

15) What is a heap tree ? Explain about different heap trees.

P.T.O.

SECTION – C

III. Answer **any 3** questions. **Each** question carries **8** marks. (3×8=24)

16) What is a tower of Hanoi problem ? Give the algorithm and explain it with three disc.

17) a) Write an algorithm to traverse a singly linked lists. 4
    b) Explain about Header linked list. 4

18) Write a C program to implement simple queue.

19) Convert the infix expression $((A + (B – C) * D) \wedge E + F)$ to postfix expression using stack.

20) a) What is a binary tree ? Explain pre-order traversal. 4
    b) Explain array representation of binary tree. 4

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