36315

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

(NEP Scheme)

Data Structures using 'C'

Time : 2 Hours Max. Marks : 60

PART – A

I. Answer **any five** of the following : **(5 × 2 = 10)**

1. Define data structures.
2. Define DMA.
3. What is stack? Mention its operation.
4. Define an infix expression. Give an example.
5. Define queue. Mention its types.
6. Define Searching and Sorting.
7. Define Linked List. List the types of Linked List.
8. Define Binary Tree.

PART – B

II. Answer **any five** of the following : **(5 × 4 = 20)**

9. Explain types of data structures.
10. Explain malloc( ) and realloc( ).
11. Write the applications of Stack.
12. Define Tower of Hanoi. Write the C-Code to implement Tower of Hanoi.
13. Define Circular queue and Double ended queue.
14. Write a C program to search an element using binary search.

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15. Explain the steps involved in inserting a node at the front end in singly linked list. Write the algorithm for it.

16. Define the following :

    (a) Root node

    (b) Siblings

    (c) Height

    (d) Degree of node

PART – C

III. Answer **any three** of the following : **(3 × 10 = 30)**

17. Write the difference between static memory allocation and dynamic memory allocation.

18. (a) Obtain the postfix expression for $X \wedge Y \wedge Z - M + N + P / Q$.

    (b) Compare iterative and recursive functions.

19. Explain the representation of simple queue with its operations.

20. Write a C program to sort given elements using Quick sort.

21. Explain the different traversal techniques of a binary tree.