

**2023**

**COMPUTER SCIENCE — HONOURS — PRACTICAL**

**Paper : CC-3P**

**(Data Structure using C)**

**Full Marks : 30**

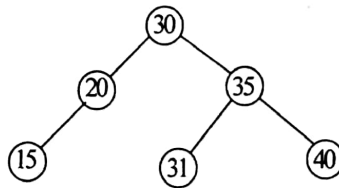
**Set - 4**

**Marks Distribution**

<b>Algorithm :</b>	<b>5</b>
<b>Source Code :</b>	<b>10</b>
<b>Output :</b>	<b>5</b>
<b>Laboratory Notebook :</b>	<b>4</b>
<b>Viva voce :</b>	<b>6</b>

Answer *any one* question.

1. Write a program in C to create a Binary Search Tree (BST) and include the following operations :
  - (a) In-order traversal (recursive)
  - (b) Post-order traversal (non-recursive) of the following tree :



2. Write a program in C to create a double linked list and perform the following operations on it :
  - (a) Delete an item from the beginning.
  - (b) Insert an item at user specified position.

3. Write a program in C to perform non-recursive Quick Sort of an array of integers.
  
  4. Write a program in C to sort a set of integer numbers using Insertion Sort.
  
  5. Write a program in C to do the following :
    - (a) Create a single linked list.
    - (b) Separate the linked list into positive and negative numbered list.
  
  6. Write a program in C to find an item entered by user from a list using Binary Search method. List may not be in sorted order.
  
  7. Write a program in C to convert an expression given in infix to postfix. Let the infix expression is given below :
$$(A * B - (C / D + E * F))$$
  
  8. Write a program in C to reverse the order of the elements in the stack using additional stack.
  
  9. Write a program in C to add the following two polynomials using linked list :
$$9x^2 + 5x - 2$$
$$3x^3 + 6x^2 - x + 6$$
  
  10. Write a program in C to find second largest from a set of numbers in single linked list.
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