

**B.Sc. DEGREE END SEMESTER EXAMINATION - MARCH 2020****SEMESTER –2: COMPUTER APPLICATIONS (CORE COURSE)****COURSE: 19U2CRCAP4: DATA STRUCTURES USING 'C'***(For Regular - 2019 Admission)*

Time: Three Hours

Max Marks: 75

**PART A*****Answer all questions. Each question carries 1 mark.***

1. Define keyword.
2. Define constant in C.
3. In which Tree Traversal the root node is visited first?
4. Define rear of a Queue.
5. Which data structure is used to perform recursion?
6. Define Data Structure.
7. What is the use of free() function?
8. Define height of a tree.
9. Define subscript of an array.
10. Mention the types of link lists.

(1 x 10 = 10)

**PART B*****Answer any eight questions. Each question carries 2 marks.***

11. What is a circular queue? Why it is called circular?
12. Why we cannot apply binary search algorithm to a linked list?
13. Find the differences between bitwise and logical operators.
14. List the applications of stack.
15. Explain the importance of dynamic data structures.
16. What is type casting?
17. Make a binary search tree for the following sequence of numbers:  
45, 36, 76, 23,89,115,98,39,41,56,69,48.
18. How is array represented in memory?
19. Define a strictly binary tree.
20. What is sparse matrix?

(2 x 8 = 16)

**PART C*****Answer any five questions. Each question carries 5 marks.***

21. How are data structures classified? Explain with examples.
22. Explain how push and pop operations are done in a stack.
23. Write a program to perform selection sort on any ten numbers.

24. Explain any two dynamic memory allocation function with suitable examples.
25. Let P be the postfix arithmetic expression: 7, 2, -, 1, 14, -, 1, 2, \* Evaluate P using stack and showing the status of the stack at every step.
26. Briefly explain any five input/output functions in C.
27. Explain recursion with example. (5 x 5 = 25)

#### PART D

***Answer any two questions. Each question carries 12 marks.***

28. Explain tree traversal methods. Write an algorithm for pre order traversing of a binary tree.
29. Convert the following infix expression to its equivalent postfix expression showing stack contents for the conversion:  $X - Y / (Z + U) * V$ .
30. Explain in detail about doubly linklists.
31. Differentiate between linear search and binary search with the help of algorithm. Which search is better? Why? (12 x 2 = 24)

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