

1227**Code : 15CS41T**

Register Number

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IV Semester Diploma Examination, April/May-2017**DATA STRUCTURES USING C.****Time : 3 Hours]****[Max. Marks : 100**

- Note :** (i) Answer any **six** full questions from Part – A. Each question carries **5** marks.
(ii) Answer any **seven** full questions from Part – B. Each question carries **10** marks.

PART – A

1. Explain pointer and show how to declare and initialize a pointer. 5
2. Write a C program to create a dynamic array. 5
3. Explain different file opening modes. 5
4. Write a C program to copy one file to another using command line arguments. 5
5. Define data structure and give the detailed classification of data structures. 5
6. Compare singly linked list with doubly linked list. 5
7. Explain the following with respect to binary tree : 5
 - (a) root
 - (b) parent
 - (c) degree of a node
 - (d) subtree
 - (e) strictly binary tree
8. Write C representation of a node in a binary tree. 5
9. Explain the concept of selection sort. 5

PART – B

10. Illustrate pointer arithmetic with examples. 10
11. Explain the following functions with their syntax : 10
- (i) fseek()
 - (ii) ftell()
 - (iii) fgetc()
 - (iv) fopen()
12. Write C functions to insert a node at the beginning and to delete a node from the end of a linked list. 10
13. Write C functions to implement PUSH and POP operations of a stack. 10
14. Write a program to implement queue in C using linked list. 10
15. Explain the insertion and deletion operation on circular queue with neat diagram and example. 10
16. Explain binary tree traversal techniques. Traverse the following binary tree with them. 10
- ```
graph TD; 1((1)) --- 7((7)); 1 --- 5((5)); 7 --- 2((2)); 7 --- 6((6)); 5 --- 9((9)); 6 --- 5_5((5)); 6 --- 11((11)); 9 --- 4((4));
```
17. Write an algorithm to convert an infix expression to postfix form. 10
18. List the applications of queues and linked list. 10
19. (a) List advantages and disadvantages of linked list. 5
- (b) Explain circular linked list with diagram. 5

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