

No. of Printed Pages : 4                      180842/170842/120842  
Roll No. .... /30833

**4th Sem / Comp**  
**Subject:- Data Structures Using C**

Time : 3Hrs.    M.M. : 100

**SECTION-A**

**Note:** Multiple choice questions. All questions are compulsory (10x1=10)

- Q.1 Which one of the following is the size of int arr [99] assuming that int is of 4 bytes? (CO3)  
a) 9    b) 36  
c) 35    d) None of the above
- Q.2 Which of the following is the advantages of the array data structure? (CO3)  
a) Elements of mixed data types can be stored  
b) Easier to access the elements in an array  
c) Index of the first element starts from 1.  
d) Elements of an array cannot be sorted
- Q.3 When the user tries to delete the element from the empty stack then the conditions is said to be a \_\_\_\_\_ (CO3)  
a) Underflow    b) Garbage collection  
c) Overflow    d) None of the above
- Q.4 Which data structure is mainly used for implementing the recursive algorithm? (CO2)  
a) Queue    b) Stack

- c) Binary list    d) Linked list
- Q.5 Which of the following is the infix expression? (CO2)  
a)  $A+B*C$     b)  $+A*BC$   
c)  $ABC+*$     d) None of the above
- Q.6 If the elements '1', '2', '3' and '4' are added in a stack, so what would be the order for the removal? (CO3)  
a) 1234    b) 2134  
c) 4321    d) None of the above
- Q.7 What is the outcome of the prefix expression +, -, \*, 3, 2, /, 8, 4, 1? (CO2)  
a) 12    b) 11  
c) 5    d) 4
- Q.8 Which of the following principle does Queue use? (CO3)  
a) LIFO principle    b) FIFO principle  
c) Linear tree    d) Ordered array
- Q.9 In the linked list implementation of queue, where will the new element be inserted? (CO3)  
a) At the middle position of the linked list  
b) At the head position of the linked list  
c) At the tail position of the linked list  
d) None of the above
- Q.10 A linear data structure in which insertion and deletion operations can be performed from both the ends is \_\_\_\_\_ (CO2)  
a) Queue    b) Deque  
c) Priority queue    d) Circular queue

(1) 180842/170842/120842  
/30833

(2) 180842/170842/120842  
/30833

## SECTION-B

**Note:** Objective type questions. All questions are compulsory. (10x1=10)

- Q.11 \_\_\_\_\_ are the variables which can be accessed by all modules. (CO1)
- Q.12 Define pointer. (CO1)
- Q.13 Graphical representation of logical flow of the program is called \_\_\_\_\_. (CO1)
- Q.14 Define Algorithm. (CO1)
- Q.15 The Height of a Binary Tree is the maximum level of its Tree. (T/F). (CO5)
- Q.16 Two nodes are called \_\_\_\_\_ if they have same parents. (CO5)
- Q.17 The post-order traversal of a binary Tree starts with processing of \_\_\_\_\_ node. (CO5)
- Q.18 \_\_\_\_\_ Tree can have at the most two children. (CO5)
- Q.19 Write one advantages of arrays. (CO3)
- Q.20 Process of removing an element from stack is called \_\_\_\_\_. (CO3)

## SECTION-C

**Note:** Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)

- Q.21 Write an algorithm to insert a node in a binary search tree. (CO5)
- Q.22 Write down a linear search algorithm. (CO6)
- Q.23 Define searching. How linear search is different from binary search. (CO6)
- Q.24 Define the following terms with a suitable diagram : (CO5)
- i) Root                                  ii) Leaf Node

(3) 180842/170842/120842  
/30833

Q.25 Why Tree is called a non-linear data structure? (CO5)

Q.26 How a 1-D array is represented in the memory? (CO3)

Q.27 List various operations associated with Linear Arrays. (CO3)

Q.28 Write down an algorithm to delete an Item from a linear array. (CO3)

Q.29 Write down an algorithm to illustrate Queue operations using arrays. (CO3)

Q.30 Explain a circular queue in brief. (CO3)

Q.31 Convert the following infix expression into its equivalent prefix and postfix expressions.  
 $A * (B + D) / E - F * (G + H / K)$  (CO2)

Q.32 Discuss various applications of stacks. (CO2)

Q.33 Define Recursion. Write a recursive function to calculate factorial of a number 'n'. (CO2)

Q.34 Write down an algorithm to insert an element in the beginning of a linked list. (CO3)

Q.35 Write down similarities and dissimilarities in stacks and queues. (CO2)

## SECTION-D

**Note:** Long answer type questions. Attempt any two questions out of three questions. (2x10=20)

Q.36 Explain array implementation of stack. (CO3)

Q.37 Explain different ways of traversing a binary tree with suitable examples. (CO5)

Q.38 Explain Bubble Sort algorithm with a suitable example. (CO6)

(3500)

(4) 180842/170842/120842  
/30833