

**Question Bank (G scheme)**

**Name of subject: Data Structure Using 'C'**

**Unit Test :I**

**Subject code:17330**

**Course : CM/IF**

**Semester: III**

**CHAPTER-1 INTRODUCTION TO DATA STRUCTURE (08)**

**3 Marks**

1. Describe big 'O' notation used in algorithm.
2. Explain different approaches to design an algorithm.
3. State different types of data types.

**4 Marks**

4. What is data structure? Why do we need data structure?
5. Define primitive data structure. Give 4 operations of data structure.
6. Define Data Structure? Enlist any two types of non-linear data structures along with example.
7. Explain time and space complexity of an algorithm.
8. Give classification of Data Structure.

**CHAPTER-2 SORTING AND SEARCHING (16)**

**3 Marks**

9. Write a program to implement linear search.
10. Differentiate between linear and binary search.

**4 Marks**

11. Write a program to implement bubble sort.
12. Write a program to implement selection sort.
13. Differentiate between linear and binary search.
14. Find the position of element 29 using binary search method in array.

$A = \{2, 3, 5, 11, 17, 21, 29, 43\}$

15. Arrange the given elements in ascending order using radix sort.  
 $A = \{361, 12, 527, 143, 9, 768, 348\}$
16. Arrange the given elements in the ascending order using merge sort.

$A = \{15, 84, 62, 08, 41, 47, 33, 18, 51, 32\}$

17. Arrange the given elements in the ascending order in quick sort.

$A = \{3, 12, 5, 19, 1, 17\}$

18.. Arrange the given elements in the ascending order using insertion sort.

A=77,33,44,11,88,22,66,55

### CHAPTER-3 STACKS (18)

#### **3 Marks**

19. Define the term 'overflow' and 'underflow' with respect to stack.
20. Write an algorithm for 'push' operation.
21. What is a recursion?

#### **4 Marks**

22. State the principle of stack with basic operations
23. Translate the given infix expression to postfix expression using stack.

$((A+B)*D)^{(E-F)}$

24. Evaluate following postfix expression.

A: 6,2,3,+,-,3,8,2,/,+,\* ,2,^,3,+

25. Write a program to find the factorial of a given number using recursion.
26. Convert following expression into prefix expression.

$(A+B)*C-D/E*(F/G)$