# BHARATI VIDYAPEETH INSTITUTE OF TECHNOLOGY

# QUESTION BANK

## Unit Test-I (Shift:-I & II)

**Program: - CM3I/IF3I**

**Semester: - III** **Course: - Data Structure (22317)**

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## CHAPTER-1(CO1)

**2 MARKS**

1. Write any four applications of data structure.
2. Define Abstract Data Type.
3. Differentiate between Linear and Non-linear data structures w.r.t. any 2 parameters.
4. Explain the term: time complexity.
5. Enlist data structure operations.

**4 MARKS**

1. Implement C Program for performing following operations on Array : Insertion, Display.
2. Give classification of data structure.
3. What is data structure? Why do we need data structure?

## CHAPTER-2(CO2)

**2 MARKS**

1. Define searching and give its type.
2. Define sorting and give its type.
3. List any four sorting techniques.

**4 MARKS**

1. Explain the working of Radix Sort Method with an example
2. Sort the following numbers in ascending order using Insertion sort. Given Numbers: 348, 14, 614, 5381, 47 and Write the output after each iteration.
3. Differentiate between Binary Search and Linear Search.

4. Sort the following numbers in ascending order using Bubble sort. Given Numbers: 348, 14, 614, 5381, 47 and Write the output after each iteration
5. Find the position of element 29 using binary search method in an array 'A' given below: A = {2, 3, 5, 11, 17, 21, 29, 43}
6. Write an algorithm for Selection sort.

## CHAPTER-3 (CO3)

**2 MARKS**

1. Define Stack and list the operations of it.
2. Show the memory representation of Stack using array with the help of a diagram.
3. Give any two applications of stack.

**4 MARKS**

1. Explain stack overflow and underflow conditions with example.
2. Convert the following infix expression to its prefix form using stack A + B – C*D/E +F. Show diagrammatically each step of conversion.
3. Show the effect of PUSH and POP operation on to the stack of size 10. The stack contains 10, 20, 22, 26, 28, and 30, with 30 being at top of the stack. Show diagrammatically the effect of-
    1. PUSH 46
    2. PUSH 48
    3. POP
    4. POP

   Sketch the final structure of Stack after performing the above said operations.
4. Evaluate the following prefix expression: - * + 4 3 2 5. Show diagrammatically each step of evaluation using stack.
5. Convert the following Infix expression to its Postfix form using stack A + B – C * D / E + F. Show diagrammatically each step of conversion using Stack.