VPMP Polytechnic, Gandhinagar

Department of Computer Engineering

Subject: DSA (4330704)

Semester: 3rd

Assignment - 1

1. What is Data Structure? Explain Primitive and Non Primitive data structure with example.
2. Difference between primitive and non primitive data structure.
3. What is algorithm? Explain key features of a algorithm.
4. Explain array with its operation, advantages and disadvantages.
5. Explain Sequential searching with algorithm.
6. Write and explain algorithm for binary search.

Assignment - 2

1. Define String. & list out string Operation.
2. Explain string length operation with algorithm.
3. Explain string Copy operation with algorithm.
4. Explain string Compare operation with algorithm.
5. Explain string Reverse operation with algorithm.

Assignment - 3

1. What is stack? Write PUSH and POP algorithms.
2. Convert following expression into the postfix notation:
   (i) a+b*(c/d)-e
   (ii) (a/b) * (c / (d+e)-f)
3. List application of stack? Explain any one in detail?
4. What is Queue? Write Insertion & deletion algorithms for simple queue.
5. What is Circular queue? Compare circular queue with normal queue.
6. Give Differentiate circular queue and simple queue.

Assignment - 4

1. Define Types of linked list. List Applications of linked list.
2. Write an algorithm to insert new node at the staring of singly linked list.
3. Write algorithm to delete a last node from singly linked list.
4. Write short note: Circular linked list.
5. Write a short note on doubly linked list.
6. Differentiate between singly linked list and doubly linked list.

Assignment - 5

1. Explain following definition of tree:
   1) Out degree 2) Height 3) Complete Binary Tree 4) Graph 5) Leaf node 6)Root node
2. Construct the tree.
   50,55,3515,52,65,33,47,75,72
3. Write the binary tree algorithm .OR List various tree traversing method.
   1) Post order
   2) Preorder
   3) In order
4. Write a Applications of binary tree.

Assignment - 6

1. Define sorting. Write and explain Selection sort algorithm.
2. Write and explain Bubble sort algorithm
3. Arrange the following data in ascending order using Radix sort
   36, 9, 25,1,49,64,16,81,4
4. Write and explain Quick sort algorithm using an example.
5. Write an algorithm for Merge sort.
6. Write an algorithm for Insertion sort.
7. Define Hashing. Explain division and Middle Square hashing methods.

7.