106121002
CSE-B

NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CSPC32- Data Structures

Programme: B.TECH | Session: JULY/2022

Date: 20.09.2022 | Cycle Test-1 | Duration: 1 Hour | Total Marks: 20

Answer all the questions

1. Convert the given infix expression to postfix expression using stack. Show the Step by step conversion and evaluate postfix expression using stack with a = 5, b = 2, c = 10. [3 M]

   c * (a – b * (c/a) + b) + c

2. Discuss advantages and disadvantages of arrays and linked lists [2 M]
3. Write *Enqueue ()* and *Dequeue ()* functions for a circular queue using arrays [3M]
4. Write *Push ()* and *Pop ()* functions for a stack using linked list. [3 M]
5. Write a function to remove duplicate elements in a sorted linked list [3M]

   Ex: Input linked list is 1->5->10->12->12->15->36->36

   Output Linked list: 1->5->10->12->15->36
6. Write a function to swap the pairwise nodes (without swapping the data) in a single linked list. [3 M]

   Ex: Input Linked list: 1->5->10->12->15->36

   Output Linked list: 5->1->12->10->36->15
7. Find the time complexity of the below functions [3 M]

(a)

```
Fun (int n)
{
   for (i=0; i<n; i++)
   {
     for (j=0; j<i ; j++)
      printf (" HI");
   }
}
```

(b)

```
Fun (int n)
 {
 for(int i=0; i<n; i++)
    for( int j=i ; j<i*i ; j++)
      if(j%i==0)
        for(int k=0; k<j; k++)
          printf("HI");
 }
```

(c)

```
Fun (int n)
{
   k=0;
   for( i=1; i<=n; i=i*2)
   {
     k++
   }
   for ( j=1; j<k;  j=j*2)
    {
      Printf ("HI")
    }
}
```