49+3*1-
+16 = 70

Roll No. | | | | | | | |

Paper Code: TCS 301

Mid Semester Examination 2018

B.Tech (CSE) ***Semester III***

Data Structure using 'C' language

Time: 1:30 Hours

MM: 50

Note:

(i) **This question paper contains two sections.**

(ii) **Both sections are compulsory.**

Section A

Attempt all questions. Each question carries one mark (1X5=5 Marks)

Q1.

a. Write overflow conditions in circular queue.

b. What will default return type of malloc() function?

c. What will be output of following code?

```
void main()
{
 float  a=3.4, b=5.5, c=2.6, *x, *y;
   x = &a;
   y = &b;
   *x = *y+*x;
   *y=*x-c;
   c=*x+b;
   printf("%f %f %f", a,b, c);
}
```

d. How many exchanges are there after pass one in insertion sort?

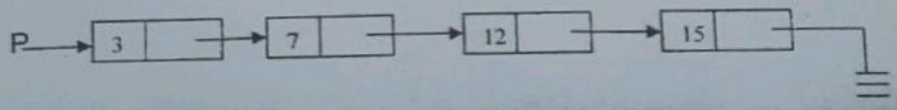
e. Write any one application of stack in computer science.

Attempt any Five parts. **(3X5=15 Mar**

Q2.

a. Write limitations of array. How they can be overcome? Explain.

b. Write code to search and update a node having info 12 from following linked list. First node of linked list is pointed by a pointer P.



c. Find total number of steps required by the following code also predict the nature of the code in terms of Big Oh notation.

```
for(i=1;i<=n;i++)
 {
   S++;
   for(j=1;j<=n;j++)
     {
       p++;
     }
 }
```

d) Given the sequence of numbers: 25,3, 22, 12, 19, 7, 8
Write the sequence after the 3rd iteration of bubble sort.

e) Write an algorithm for pop operation in stack.

f) What will be the contents of a stack when following operations are performed with an empty stack?
push (5), push (7), pop (), push (9), pop (), push (22), pop (), push (2).

Section – B

Each question contains three parts a, b & c. Attempt any two parts of choice from each question.

Q3. (5X 2 = 10 Marks)

a. What do mean by complexity of an algorithm? Explain time and space complexity of an algorithm.

b. Write an algorithm for insert operation in queue (using linked list).

c. Write C function to sort an array using quick sort technique.

Q4.

a. Write a C function to create a singly linked list by inserting node in the right hand side.

b. Write a 'C' function to implement insert operation of circular queue (using array). (Use local variable/s)

c. Use the insertion sort to put the numbers 13, 12, 4, 11, 5,6,2 into increasing order. Illustrate the output returned in each pass clearly.

Q5. (5X 2 = 10 Marks)

a. Write a C program to create a dynamic array of N elements then store N elements in it, finally print all even elements in it.

b. What do you mean by asymptotic notations? Explain with examples.

c. Write a 'C' function to implement push operation in stack (Using array).