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Paper Code: TMC 401 /TIT 401 /TCS 410

Mid Semester Examination 2018

B.Tech(IT/EC) / MCA IV *Semester*

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

Q1. (1X5=5 Marks)

a) What will be output of following code?

```
void main()
 {
   int a=2,b=3,c=6, *p,*q;
   p = &a;
   q = &b;
   *p = *p+c;
   *q=*p + *q+a;
   c=*q;
  printf("%d %d %d", a,b, c);
}
```

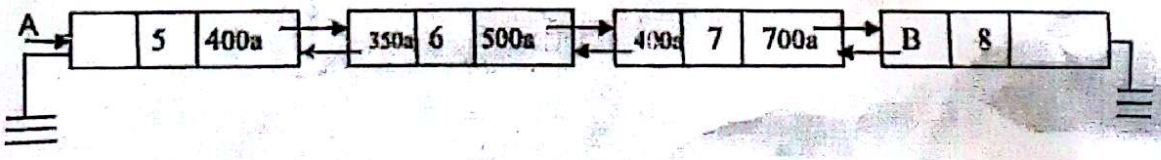
b) What will be output of following code?

```
void main()
 {
  int a=6, *x, *y ,b=7, c=2;
  x=&b;
  y=&a
  *x=*y+a;
  *y=*x+b;
  c= *x+*y+b;

  printf("%d %d %d", a,b, c);
 }
```

c The Structures cannot contain a pointer to itself. (True /False)

d) What is the value of A and B in following linked list



e) Referring to the sample code given below what will be new contents of array x.

```
int x[10] = {2,3,4,5,15,16,17,18,9,10};
int y = 20; int i = 10;
x[ - - i ] = y;
```

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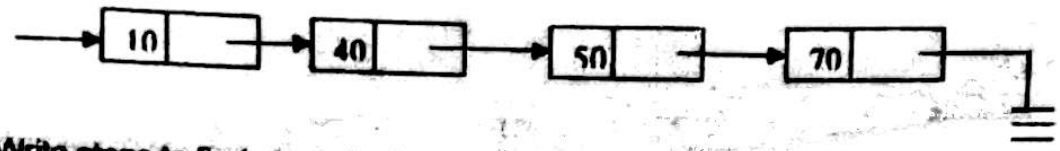
Attempt any Five parts. **(3X5=15 Marks)**

Q2.

a) Given the sequence of numbers: 22,13, 12, 2, 9, 7, 8
Write the sequence after the 2nd iteration of selection sort.

b) Write code to search and update a node having info 50 from following linked list.
First node of linked list is pointed by a pointer P.



c) Write steps to find complexity of following code in terms of Big Oh notation.

```
int i=1,j=1 ,n=10,p=1,q=1,s=1,m=5;
  while(i<=n)
    {  p++;
       while( j<=m)
          {
            s=q+s;
            j++;
          }
       i++;
    }
```

d) Differentiate between linked list and doubly linked list.

e) Write down algorithm for push operation in stack (using linked list)

f) Write steps to delete node with info 70 from the following linked list ,First node is pointed by a pointer S.

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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. Write down an algorithm to insert node in queue (Using linked list).

b. Write a C function to create a stack and then print it from bottom to top.

c. Write C function to implement pop operation using double pointer.

Q4.

a. Write a C function to create a dynamic array and store N elements in it. Then reverse the content of that array (using swapping method).

b. Use the bubble sort to put the numbers 3, 2, 4, 1, 5 into increasing order. Illustrate The output returned in each pass clearly.

c. Create a singly linked list by inserting node in the right hand side and the Input a key and count all those nodes having information smaller than given key.

Q5. (5X 2 = 10 Marks)

a. Assume that we already have a singly linked list. Input a key search it in the linked list if found ,delete that node otherwise print "Not found"

b. Write C function to implement serve operation of queue using linked list (use double pointer).

c. Consider following infix expression: Y= (p + q) * r – (s ^ t)+ (u+(v ^ w)) then draw an expression tree for it and then find postfix expression.

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