29/4/2019

INDIAN STATISTICAL INSTITUTE
MS-LIS 1st Year, 2018-2019 (Semester - II)
Data Structures and Computer Programming
End Semester Examination

Full Marks : 50 Time Allotted: 3h

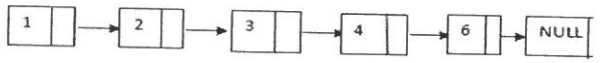
SECTION - A

(Answer **any five** from this section) 5x8=40

A1 Sort this array using merge sort (Show steps) : 2,4,1,6,3,5,8,7.
Write the algorithm for merge sort.

A2 Convert this infix notation to postfix and prefix notation :
(A + B) * C + D / (E + F * G) - H
Write a program to push and pop an element from a stack using array.

A3 Write a program to create the following linked list:



and insert a node with value 5 after node of value 4.

A4 Write a program to create a file that can store information of students name, students roll no and their marks for n students. Take the inputs from console.
Name the functions that are used to read and write in formatted way in a file.

A5 Write a function to display a linked list in reverse order.
Write a function to insert an element in a queue.

A6 Given a linked list, write functions to insert a node at beginning and delete a node at end.

SECTION – B
(Multiple choice questions)

B1..B5 pick appropriate outputs from given options, if the programmes are run on **gcc compiler.** 5x2=10

B1.

```
#include <stdio.h>

int main()
{

     int arr[5] = {12, 10, 13, 90,0};
     int *ptr1 = &arr[0];
     int *ptr2 = ptr1 + 3;

     printf("%d ", *ptr2);
     printf("%d", ptr2 - ptr1);

return 0;
}
```

Options:

a) 90,3

b) 90,12

c) 10,12

d) 0,3

B2.

```
#include <stdio.h>
int main()
{

     int i = 25;
     int* j;
     int** k;
     j = &i;
     k = &j;
     printf("%u %u %u ", k, *k, **k);
     return 0;
}
```

Options:

a) address address value

b) address value value

c) address address address

d) None of the above

B3.

```
#include<stdio.h>
int main()
{
     int i = 0;
     char c = 'a';

     while(i < 2)
     {
          i++;
          switch (c)
          {
               case 'a':
                    printf("%c", c);
                    break;
               break;
          }
     }
     printf(" after while\n");

     return 0;
}
```

Options:

a) after while

b) aa after while

c) after while after while

d) None of the above

B4.

```
#include<stdio.h>
#define fun(x) (x)*10

int main()
{
    int t = fun(5);
    int i,count=0;
    for(i = 0; i < t; i++)
       count++;

    printf("%d",count);
    return 0;
}
```

Options:

a) 50

b) 10

c) 5

d) None of the above

B5.

```
#include<stdio.h>
main()
{
   struct student
   {
       int num = 10;
   }var;

   printf("%d", var.num);
}
```

Options:

a) 10

b) Garbage value

c) Compiler error

d) None of the above