**Shiv Nadar Institute of Eminence**
**Mid Term Examination**
**Monsoon 2024**

**COURSE CODE: CSD101** **MAX. DURATION: 1.5 hr**
**COURSE NAME: Introduction to Computing and Programming**
**COURSE CREDIT: 4** **MAX. MARKS: 40**
**Date: 01-10-2024**

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Department/ School: CSE SOE

**INSTRUCTIONS: -**

1. Do not write anything on the question paper except **name, roll number** and **department/school.**
2. All the sections are compulsory.

**SECTION A (Max Marks = 24 Marks)**

1. What is identifier. Illustrate two rules of creating an Identifier in C with example. (3 marks)

2. Evaluate the following expression: (2 marks)

```
7%7+7/7-7*7>>1
```

3. Write the output of the following code snippet

3.1 (2 marks)

```
int main() {
   int a = 6;
   int b = a++;
   printf("%d %d\n",_________ );
   return 0;
}
```

Explain the way one can fill in the blanks to get the following output for the above code:
**6 7**

A) a, b
B) b, a
C) a, a
D) b, b

3.2 (2 marks)

```
int main() {
    int arr[5] = {15, 21, 25, 10, 8};
    int min = 1000,  i;
    for ( _____ ) {
    if (arr[i] < min) {
            min = arr[i];}
    }
    printf("%d\n", min);
    return 0;}
```

Illustrate the way one can fill in the blanks to get the following output for the above code:

**10**

A) i = 1; i < 5; i++

B) i = 0; i < 5; i++

C) i = 0; i < 4; i++

D) None of the above

4. Provide the output of the following program and **explain the reasoning behind** the chosen output.

4.1 (3 marks)

```
int incr (int i)
{
static int count = 0;
count = count + i;
return (count);
}
main ()
{
int i,j;
for (i = 0; i <=4; i++)
    j = incr(i);
}
```

A) 10

B) 4

C) 6

D) 7

4.2 (3 marks)

```
#include <stdio.h>
int foo(int *x,int *y,int *z)
{
*y = *y+1;
*z = *x+*x;
}
int main(void)
{
int a = 3;
int b = 3;
int c = a+b;
foo(&c,&a,&a);
printf("%d",a);
return 0;
}
```

A) 15

B) 12

C) 20

D) 13

4.3 (2 marks)

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

```
{
int arr[5];
// Assume base address of arr is 2000 and size of integer is 32 bit
printf("%u %u %u", arr, arr + 1, arr + 3);
return 0;
}
```

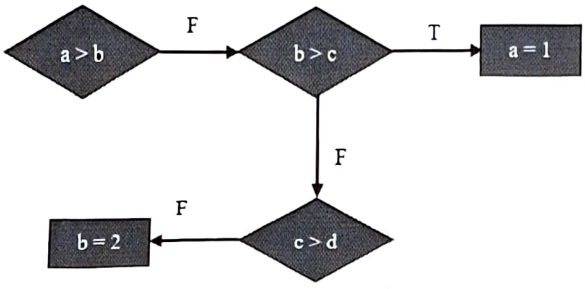
5. Consider the function (3.5 marks)

```
find (int x, int y)
    {return (( x < y) ? 0 : ( x – y)); }
```

Let **a, b** be two non-negative integers. The call **find (a, find (a, b))** can be used to find which of the following operation. Justify your answer by providing step wise solution.

A) maximum of a, b
B) positive difference of a, b
C) sum of a, b
D) minimum of a, b

6. Consider the following flow chart (3.5 marks)




Which of the following correctly implement the above flow chart **(Select two options)**

A)
```
if (a > b)
    if (b > c)
    a = 1;
    else if (c > d)
    b = 2;
```

B)
```
if (a <=b)
    if (b > c)
    a = 1;
    else if (c > d)
    b = 2;
```

C)
```
if (a > b)
    ;
    else if (b > c)
    a = 1;
    else if (c < = d)
    b = 2;
```

D)
```
if (a > b)
    ;
    else if (b > c)
    a = 1;
    else if (c > d)
    ;
    else b = 2;
```

**Note:** Semicolon (;) is used to skip the line and do nothing. Do not select more than two options otherwise negative marks will be awarded.

## SECTION B (Max Marks = 16 Marks)

1. Outline the steps involved in the execution of function in C, along with an example?

(8 marks)

Or

1. (a) Illustrate the types of parameters or arguments in the function, along with an example.

(4 marks)

(b) What are the types of the function call (with arguments) in C, along with an example.

(4 marks)

2. How about you help the shopkeepers within the campus with your programming skills. To do this, write a point-of-sale program in C. The program should store the "item-codes" and "item-price" in a shop as a two-dimensional array (named -- "inventory-list") for five different items.

You can initialize this list as follows,

inv_list[5][2] = {{3,10},{5,30},{9,12},{11,15},{15,80}}

Write a program which takes the shopping list as an input and outputs the amount to be paid by the customer?

(8 marks)

**Input:**

Enter the no. of bought items: 3

Enter the item id: 3
Enter the item quantity: 2
Enter the item id: 5
Enter the item quantity: 2
Enter the item id: 9
Enter the item quantity: 1

**Output:**
Total shopping cost is: 92.000

Or

2. Write a C program to print the following butterfly pattern. (8 marks)

```
*       *
**     **
***   ***
********
********
***   ***
**     **
*       *
```