Register Number:

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**ST. JOSEPH'S COLLEGE (AUTONOMOUS), BANGALORE-27**

**BSc Computer Science –I SEMESTER**

**SEMESTER EXAMINATION: JANUARY2021**

**CS118: Digital Fundamentals and Programming in C**

**Time- 2 1/2 hrs.** **Max Marks-70**

**This paper contains .5.. printed pages and three sections**

**SECTION A:**

**Answer all the questions**

1.A)Guess the output of the following

```
Int x=10;
float y=10.0;
 If(x==y)
    printf(" X and Y are equal");
 else
    printf(" x and y are not equal");
```

a) x and y are not equal
b) Compiler Error
c) X and y are equal
d) Run Time error

B)How many times will the print statement execute.

```
int main()
{
int a = 0;
while(a==0)
{
   printf(" HELLO ST JOSEPH'S COLLEGE");
}

return 0;
}
```

a) 0 times
b) Infinite times
c) 1 time
d) Nothing is printed

2.A) What is output of below program?

```
int main()
{
int i,j,count;
count=0;
for(i=0; i<5; i++);
{
        for(j=0;j<5;j++);
        {
           count++;
        }
}
printf("%d",count);
return 0;
}
```

a) 5
b) 10
c) 1
d) 0

B)What is the meaning of below lines?

```
void sum (int, int);
```

(A) sum is function which takes int arguments
(B) sum is a function which takes two int arguments and returns void
(C) it will produce compilation error
**(D)** Function with no arguments.

3.A)The concept of two functions with same name is know as?

(A) Operator Overloading
(B) Function Overloading
(C) Function Overriding
(D) Function renaming

B)Pointers can be created of following data types?

(A) character
(B) integer
(C) Unsigned character
(D) All of these

4. A)What is output of below program?

```
int main()
{
const int a = 10;
printf("%d",++a);
return 0;
}
```

(A) 11
(B) 10

(C) Compilation Error
(D) 0

B)What will be the output of this program

```
int main()
{
   int a = 10.5;
   printf("%d",a);
   return 0;
}
```

(A) 10.5
(B) 10
(C) 0
(D) Compilation Error

5. A) Can we declare a function inside structures?

(A) Yes
(B) No
(C) Depends on Compiler
(D) Yes but run time error

B)The Size of the Double Datatype is

a) 2
b)4
c)8
d)16

6. A) program that converts computer data into some code system other than the normal one is known as

A. Encoder

B. Simulation

C. Emulator

D. Coding

B)Conversion of Decimal Number 61 to its Binary Equivalent is

a)110011
b)11001110
c)111101
d)11111

7.A) Conversion of Octal Number to Hexadecimal Number is

a)4A
b)5A
c)15
d)20

B)Computer Memory in which user cannot write new information or instructions is

a)RWM
b)RAM
c)ROM
d)CMOS

8.A)Characteristics of a Read Only Memory is that it is

a)Read Only
b)Non Volatile
c)Volatile
d)Both A and B

B)In a J-K flip-flop, if J=K the resulting flip-flop is referred to as

a) D flip-flop
b) S-R flip-flop
c) T flip-flop
d) S-K flip-flop

9. A) The only difference between a combinational circuit and a flip-flop is that
a) The flip-flop requires previous state
b) The flip-flop requires next state
c) The flip-flop requires a clock pulse
d) The flip-flop depends on the past as well as present states

B)Desktop Computer is also known as

a)Note Book
b)PC
c)Laptop
d)Mainframe

10. A) The Operating System that allows only one program to run at a time is

a)Batch Processing
b)Embedded
c)Realtime
d)Multitasking

B)Which type of display is the latest to be used for portable computer

a)LED Display
b)LCD Display
c)Plasma Display
d)Electroluminescent Display

**SECTION B:**

**Answer any five questions(5*6=30)**

11. Subtract 72 from 36 using two's complement method. Mention in detail the steps involved.

12. What are multiplexers? Design a 4:1 multiplexer and explain its working.

13. How is it advantageous to have cache memory installed in a computer? Discuss in detail with a diagram.

14. Define a Function .Write a program to find the factorial of a number using functions.

15. Write a program to find the Julian Date using Switch statement.

16. Write a program to swap two numbers using pointers.

17. Write a program to sort N numbers in an array using Bubble sort.

**SECTION C:**

**Answer any two questions (2*10=20)**

18. Design full adder and explain its working in detail with a circuit diagram and truth table.

19. Simplify the following equation using K maps F (P,Q,R,S,) = $\sum$ (0, 1, 2, 4, 5, 9,11,14,12).

20. Write a program to find second largest and second smallest of four numbers using if statement.