GATE

# Computer Science & Information Technology

## C Programming

DPP

## Control Flow Statements

**Q1**
```
#include <stdio.h>
    int main(void)
{
        int i = 2, j = 3, k = 4;
        if (i < j ? 1 : 0)
            printf("GATE");
        else
            printf("Wallah2023");
        return 0;
    }
```
The output of the program is _____.

**Q2**
```
#include <stdio.h>
    void main( )
   {
    int a, b, c, d;
      a = 2; b = –1; c = 3; d = –4;
      if(a = b – c – d)
          printf("%d%d%d", a++, b--, c++);
      else
          printf("%d%d%d", c--, ++ a, ++b);
    }
```
The output is _____.

(A) 1 −2 4

(B) 3 1 0

(C) 2 1 −3

(D) 3 3 0

**Q3**
```
#include <stdio.h>
    int main(void)
      {
      int a = 3 > 2 ? 0 ? 0 : 1 : 5;
       if(a = = a – 1)
          printf("GATE 2023");
       else
          printf("GATE WALLAH");
       return 0;
      }
```
The output of the program is _____.

(A) GATE 2023 (B) GATE WALLAH

(C) Compiler error (D) Garbage value

**Q4**
```
#include <stdio.h>
    void main( )
    {
      int a;
        a = printf("GATE Wallah 2023");
       if(a%4 = = 0)
        a = a + 5;
      else
        a = a – 5;
      printf("%d", a++);
    }
```
The value of a at the end of the program is ___.

**Q5**
```
#include <stdio.h>
    void main( )
   {
      int i, j, k;
        j = 4;
        k = 0;
      i = j < k ? k : j --;
      if (j < i)
          j = j + k – 1;
      if (j = = i)
          j = j – i;
      else
          j = j + -- k,
      printf ("%d", j + k – i);
    }
```
The output is ___.

**Q6** Consider the following program:
```
#include<stdio.h>
int main()
```

```
{
int a=19, b=20;
if(a++<b--) printf("%d",a+++--b);
else printf("%d", ++a+--b);
return 0;
}
```

The output is _____.

**Q7**

```
#include<stdio.h>
void main()
    {
    int a=0;
    printf("%d", a);
    if(a=2){
       printf("Hi");
       printf("%d",a);
    }else{
       printf("Bye");
    }
    printf("%d", a);
    }
```

The output string is:

(A) 0Hi22 (B) 0Hi20

(C) 0Bye0 (D) 0Hi00

**Q8**

```
#include<stdio.h>
void main()
    {
       int a=0, b=0;
       a=(a=4)||(b=1);
       if(a&&b) printf("CProgramming");
       else printf("PhysicsWalah");
       printf("%d",b);
    }
```

The output is-

(A) CProgramming0 (B) CProgramming1

(C) PhysicsWalah0 (D) PhysicsWalah1

# Answer Key

| | |
|---|---|
| Q1 | GATE |
| Q2 | (B) |
| Q3 | (B) |
| Q4 | 22~22 |
| Q5 | -4~-4 |
| Q6 | 38~38 |
| Q7 | (A) |
| Q8 | (C) |

# Hints & Solutions

**Q1 Text Solution:**

i < j ? 1 : 0

In the above expression i value is less than j value, hence it will return 1.

So, it will print GATE.

**Q2 Text Solution:**

a = – 1 – 3 + 4

a = 0

a | 2 0

Assignment operator assigns and returns the value

b | ++b : – 1 0 ,

a | ++a : 0 1 ,

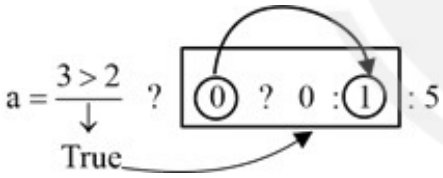
c | c – – : 3 2

⇓

Post decrement (It will print 3, then update to 2)

Output: 3 1 0.

**Q3 Text Solution:**




a = 1

Assignment operator assigns the value and returns it.

if (a = a – 1)

0

⇓

Condition: false

Output: GATE WALLAH

**Q4 Text Solution:**

GATE Wallah 2023

↓

a = 16

printf returns the number of characters successfully printed

16 % 4 = 0 → True

↓

a = a + 5

a | 16 21 22

Hence the final value of a is 22.

**Q5 Text Solution:**

i j k

4 4 0 – 1

3 2 1

3 < 4

j = 3 + 0 – 1 = 2

2 ! = 4

j = j – 1

= 2 – 1

j = 1

printed value = j + k – i

= 1 – 1 – 4

= –4

**Q6 Text Solution:**

If(19<20)→ Condition is true. After the condition is

evaluated, a is incremented to 20 and b is decremented

to 19.

Now, printf("%d",a+++--b); is evaluated. b is decremented to 18. So, (20+18) i.e. 38 is printed. After

that, a is incremented to 21.

Hence, output is 38.

**Q7 Text Solution:**

```
void main()
    {
    int a=0;
    printf("%d", a); // 0 is printed
     if(a=2){//Assignment operator assigns and
returns the assigned value; So 2 is assigned to a
```

and 2 is returned. Any non-zero value is considered true.

```
        printf("Hi");//"Hi" is printed
            printf("%d",a);//Since a contains 2, 2 is printed.
    }else{
        printf("Bye");
    }
        printf("%d", a); //Since a contains 2, 2 is printed
    }
```

Output: 0Hi22

**Q8** **Text Solution:**

a = 0. b=0;

a=(a=4)||(b=1) //Assignment operator assigns and returns the assigned value. Here, short-circuiting will be applied. Since the logical operator is OR, if the first part is true, second part is not evaluated at all. Hence, b=0, a=1.

if(a && b)//The condition evaluates to 1 && 0 i.e. 0. Hence, else part is evaluated.

Output: PhysicsWalah0