GATE

Computer Science & Information Technology

C - Programming

Function & Storage Class

DPP: 1

Q1 Consider the following program:

```
#include<stdio.h>
int f2(int a)
{
   int b=0;
   b=b+5;
   return a*b;
}
int f1(int a)
{
   int b;
   b=f2(a);
   return a*b;
}
int main()
{
   int i, a=5, b=4;
   for(i=0;i<2;i++)
{
      b-=f1(a)-f2(a);
      printf("%d\t", b);
   }
   return 0;
}
```

The sum of the printed values is _____

Q2 Consider the following program:

```
#include<stdio.h>
void print(int n)
{
   for(n++;n++;n++)
   printf("GATE Wallah");
}
int main()
{
   void print();
   void print();
   print(-9);
   return 0;
}
```

Which of the following is correct?

(A) Compilation error

(B) "GATE Wallah" will be printed infinite number of times.

(C) "GATE Wallah" will be printed 5 times.

(D) "GATE Wallah" will be printed 4 times.

Q3 Consider the following program.

```
#include<stdio.h>
void f(int n)
{
   switch(n<<1+n)
  {
      default: printf("Sresth");
      case 4: printf("Parakram");
      case 3: printf("2024");
      break;
      case 2: printf("2025");
   }
}
int main()
{
   f(1);
   return 0;
}
```

The output is-

(A) Parakram2024

(B) SresthParakram2024

(C) Parakram

(D) Sresth2025

Q4 Consider the following program:

```
#include<stdio.h>
int f(int b, int a)
{
```

```
    int x;
    x=a<<b;
    b=x*a--;
    return a+b-x;
}
int main()
{
     printf("%d", f(1,2));
     return 0;
}
```

The value printed is _____.

Q5 Consider the following program:

```
#include <stdio.h>
int r(int num)
{
   return --num;
}
int main()
{
    int n=4;
    for (r(n);r(n++);r(--n))
    printf("%d\t",r(--n));
    return 0;
}
```

The output is-

(A) 1 2 3

(B) 1 2 3 4

(C) 3 2 1

(D) 4 3 2 1

GATE

Answer Key

Q1	-292
Q2	(D)
Q3	(A)
Q4	5
Q5	(C)

Hints & Solutions

Q1 Text Solution:

For i=0:
f1(5):
Line 1: int b;
Line 2: b=f2(5);//b=25
Line 3:return 5*25; //return 125 to main().
f2(5):
Line 1: int b=0;
Line 2: b=b+5;//b=5
Line 3: return 5*5;//return 25 to f1.Go to Line 3 of f1(5)
f2(5):
Line 1: int b=0;
Line 2: b=b+5;//b=5
Line 3: return 5*5;//return 25 to main().
b in main() is updated to: b=b-f1(a)+f2(a)=4-125+25=-96.
For i=1:
f1(5):
Line 1: int b;
Line 2: b=f2(5);//b=25
Line 3:return 5*25; //return 125 to main().
f2(5):
Line 1: int b=0;
Line 2: b=b+5;//b=5
Line 3: return 5*5;//return 25 to f1.Go to Line 3 of f1(5)
f2(5):
Line 1: int b=0;
Line 2: b=b+5;//b=5
Line 3: return 5*5;//return 25 to main().
b in main() is updated to: b=b-f1(a)+f2(a)=-96 -125+25=-196.
Output is: -96 -196
Sum= -292

Q2 Text Solution:

```
int main()
{
   void print();//No compilation error
   void print();//No compilation error
   print(-9); //print(-9) is called.
   return 0;
}
print(-9){//n=9
for(n++; n++ ;n++)
      -9   -8 ->printf() is executed    -7
           -6 ->printf() is executed    -5
           -4 ->printf() is executed    -3
           -2 ->printf() is executed    -1
            0 -> Loop terminates
}
```

“GATE Wallah” will be printed four times.

Q3 Text Solution:

```
f(1):
n=1;
switch(n<<1+n)
{
    //switch(1<<2) i.e switch(4)
    default: printf("Sresth");
    case 4: printf("Parakram");
    //case 4 is executed.
    //since no break is there case 3 will also be executed.
    case 3: printf("2024");
    break;
    case 2: printf("2025");
 }
```

Output: Parakram2024

Q4 Text Solution:

f(1,2):
b = 1, a = 2;
x = a <<b; //x = 2 << 1 = 4
b = x*a--;//b = 4*2 = 8. After this, a is decremented to 1.
return a + b - x; // return 1+8-4 i.e. return 5.
main():
printf("%d", f(1,2));//5 is printed.
Output: 5

Q5 Text Solution:

r(4)=3. //Intialization
r(n++)or r(4)=3->TRUE// Condition check

n is incremented to 5.
printf("%d\t",r(--n));// printf("%d\t",r(4))
//3 is printed.
r(--n) or r(3) is called.
r(n++)or r(3)=2->TRUE// Condition check
n is incremented to 4.
printf("%d\t",r(--n));// printf("%d\t",r(3))
//2 is printed.
r(--n) or r(2) is called.
r(n++)or r(2)=1->TRUE// Condition check
n is incremented to 3.
printf("%d\t",r(--n));// printf("%d\t",r(2))
//1 is printed.
r(--n) or r(0) is called.
r(n++)or r(1)=0->FALSE//Loop terminates.
Output: 3 2 1