81. What is the output of the following program?

```
#include<stdio.h>
int main(void)
{
        int i=10;
        do
        {
                printf("i=%d\t", i);
                i=i–3;
        }while(i);
        return 0;
}
```

(a) 10

(b) 7

(c) infinite loop

(d) Compile time error

(c) 8(⇒

```
#include <stdio.h>
int main()
{ int i = 10;
  do {
      printf("i = %d", i);
      i = i-3;
  }
  while(i);
  return 0;
}
```

i = 10
i = 7
i = 4
i = 1
i = -2
i = -5
|
|
|

i = non-zero

(c) infinite Loop

82. What does the following fragment of C-program print?

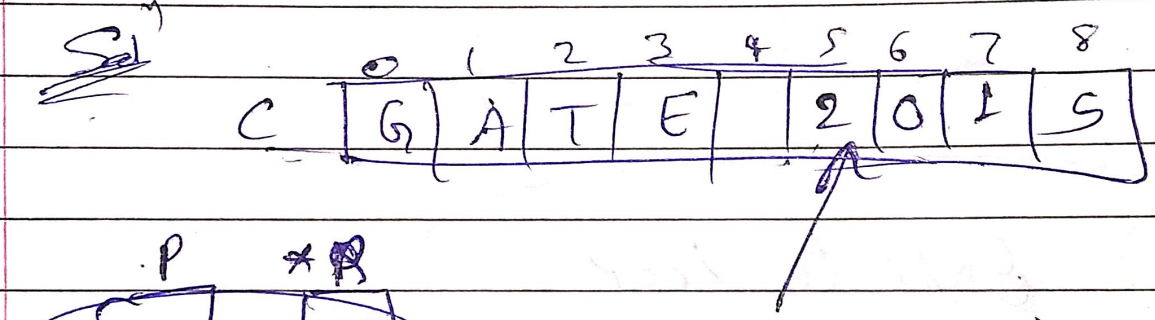
```
char c[ ] = "GATE 2015";
char *P = C;
printf ("%c", *(P+P[3] – P[1] ));
```

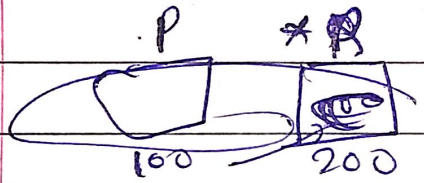
(a) GATE 2015
(b) E2015
(c) 2
(d) 2015

(c) 82⇒

```
char c[] = "GATE 2015";
char *p = c;
printf("%d", *(p + p[3] - p[1]));
```

Sol:





Ans → (c) 2

83. int f(int *P,int n)

```
{
        if(n<=0)
            return 0;
        else
        {
            if (*P% 2 = = 0)
                return *P + f(P + 1, n–1);
            else
                return *P – f(P + 1, n – 1);
        }
}
void main ( )
{
    int a[6] = {12,7,6,3,2,1};
    printf("%d", f(a,6) );
}
```

The output of the above program is_____.

83 ⇒

```
int f(int *p, int n)
{
    if (n<=0)                    // 6 <= 0 // False
        return 0;
    else
    { if (*p % 2 == 0)           //
        return *p + f(p+1, n-1);
      else
        return *p - f(p+1, n-1);
    }
}
void main()
{ int a[6] = {12, 7, 6, 3, 2, 1};
  printf("%d", f(a, 6));
}
```

*p → p, n → n

Sol^n

a	12	7	6	3	2	1

*p % 2 == 0 ⇒ 12 % 2 == 0

12 + f(

print(f(a, 6)) = 3

Ans

84.
```
#include <stdio.h>
int f(int n, int k)
{
  if(n = = 0)
        return 0;
  else if (n % 2==1)
       return f(n/2, 2 * k) + k;
  else
       return f(n/2, 2 * k) – k;
}
int main ( )
{
  printf ("%d", f(10, 1));
}
```

The output of the above program is _____

Q4)

```
#include <stdio.h>
int f(int n, int k)
{
    if (n==0)
        return 0;
    else if (n%2==1)
        return f(n/2, 2*k) + k;
    else
        return f(n/2, 2*k) - k;
}
int main()
{
    printf("%d", f(10,1));
}
```

Ans: 5

Sol:

f(10,1) ⇒ n=10, k=1 ⇒ n%2==5

f(5,2) ⇒ n=5, k=2 f(5,2) ⇒ 2

f(4,4) + 2 - 1 = f(2,8) + 1

f(1,8) ⇒ 4 + 1 = f(1,8) - 3

f(0,16) ⇒ 8 - 3 ⇒ f(0,16) + 5

0 + 8 - 3

= 5

85. What is the output of the following program?

```
#include<stdio.h>
int main( )
{
  int a=7;
  do
  {
        printf("a=%d\t", a);
        a=a – 3;
  }while(a);
  return 0;
}
```

(a) 4

(b) 7

(c) infinite loop

(d) Compile time error

(2) Obs ⇒

```
#include<stdio.h>
int main()
{
    int a=7;
    do {
        printf("a=%d", a);
        a=a-3;
    }
    while (a);
    return 0;
}
```

a = 7
a = 4
a = 1
a = -2
(

(c) Infinite Loop

86. What is the output of the following C code?

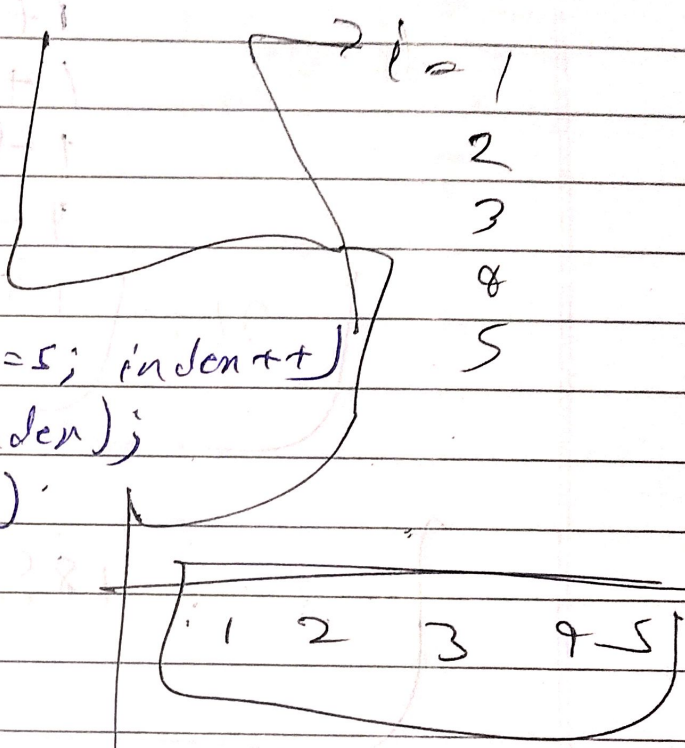
```
#include < stdio.h>
#include < conio.h>
void main ( )
{
  int index;
  for (index=1; index<=5; index++)
  {
        printf ("%d", index);
        if (index = = 3)
        continue;
  }
}
```

(a) 1245 (b) 12345

(c) 12245 (d) 12354

(b) 86)

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int index;
    for (index=1; index<=5; index++)
    { printf("%d", index);
      if (index==3)
          continue;
    }
}
```



87. Consider the following C function.

```
int fun(int n)
{
  int x = 1, k;
  if (n == 1) return x;
  for (k =1; k<n; ++k)
  x = x + fun(k) * fun(n–k);
  return x;
}
```

The return value of fun(6) is _____.

87⇒

```
int fun (int n)
{
    int x=1, k;
    if (n==1)
        return x;
    for(k=1; k<n; k++)
        x = x + fun(k) * fun(n-k);
    return x;
}
```

fun(6)

n = 6

k=1

x = 1 + fun(1) * fun(1-1

f(1) = 1
f(2) = 2
f(3) = 5
f(4) = 15
f(5) = 51

$$x = x + \sum_{k=1}^{5} f(k) \times f(6-k)$$

$$x + [f(1)\times f(5) + \cdots f(5)\times f(1)]$$
$$1 + [1\times 51 + 2\times 15 + 5\times 5 + 15\times 2 + 51\times 1]$$
$$1 + 51 + 30 + 25 + 30 + 51$$
$$1 + 102 + 60 + 25$$
$$1 + 187$$

x = 188

x = 188

Ans

88.

```
int sqr (int x);
int  cube (int x);
int func (int n);
int main ( )
{
 int n=8;
 printf ("%d\n",func (n));
 return 0;
}
int sqr (int x)
{  return x*x;   }
int cube (int x)
{   return x*x*x;    }
int func (int n)
{
  return n+sqr (n–2)+ cube (n–3);
}
```

The output of the above program is _____.

888

```
int sqr (int x);
int cube (int x);
int func (int n);
main ()
{ n = 8;
  print (fun (n));
}
sqr (x)
{ x*x }
cube (x)
{ x*x*x }

func (n)
{ n + sqr (n-2) + cube (n-3);
}
}
```

```
func (8)
{
  8 + (6)^2 + (5)^3
  = 8 + 36 + 125
  [169]
}
```

→ Ans [169]

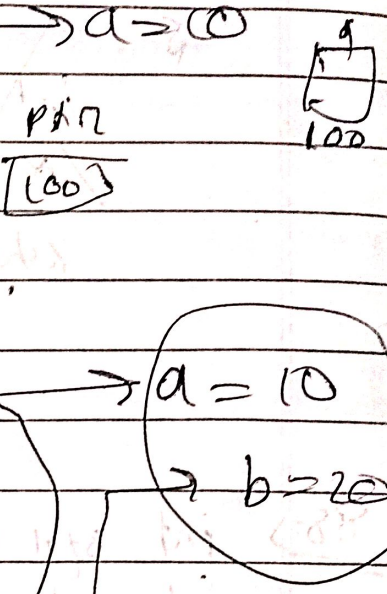
89.
```
void main ( )
{
  int a, b;
  int *ptr = (int*)0;
  if (ptr == (int *)0)
  {
        ptr = & a;
        a = 10;
        printf("\n value of a: % d", *ptr);
        ptr = (int*)0;
  }
  if(ptr ==(int *)0)
  {
        ptr = & b;
        b = 20;
        printf ("\n value of b: %d", *ptr);
  }
}
```

(a) 10 20 (b) 20 10

(c) 11 20 (d) None of these

(a) 89.

```
void main ()
{
    a, b
    *ptr = (int *) 0;
    if (ptr == (int *) 0)
    {
        ptr = &a;
        *a = 10;
        print (*ptr);
        ptr = (int *) 0;
    }
    if (ptr == (int *) 0)
    {
        ptr = &b;
        b = 20;
        print (*ptr);
    }
}
```



(a) 10, 20