Q.26 What is the value returned by the following function when $x = 1$ and $y = 3$?

```
int fun (int x, int y)
{
    if (x == 0 && y> = 0) return y + 1 ;
    else if (x > 0 && y == 0) return f(x – 1, 1) ;
    else if (x>0 && y>0) return (f(x – 1, f(x, y–1)));
}
```

Q.27 What does the following fragment of C program print?

```
char x[ ] = "JSHAKZAAOHE";
char *y = x;
printf("%s", x + y [10] – y[7]);
```

(a) Prints the entire string

(b) Prints only "AKZAAOHE"

(c) Prints only "KZAAOHE"

(d) Prints only "AAOHE"

Q.28 Consider the following code

```
int Do (char *gate)
{
    char *gate1 = gate;
    char *gate2 = gate + strlen (gate) – 1;
    while (gate1 < gate)
    {
        if (*gate1 ++ ! =*gate2 - -)
        return 0;
    }
    return 1;
}
```

What is the functionality of above function Do( )?

(a) Check whether string is odd palindrome

(b) Check whether the string is even palindrome

(c) Check whether the string is palindrome

(d) None of the above

Q.29 Consider an expression:

$$(j + ((i - j) \& - (i < j))).$$

Which of the following is true about the given expression, where i, j are integers?

(a) Finds the maximum of two integers i and j

(b) Finds the minimum of two integers i and j

(c) Finds the G.C.D of two integers i and j

(d) Finds the L.C.M of two integers i and j

Q.30 Assume i and j are small integers. Which of the following code snippets swaps i and j without third variable? (^ is a XOR operation bitwise).

(a)
```
i = i + j
j = i – j
i = i – j
```

(b)
```
i = i * j;
j = i / j;
i = i / j;
```

(c)
```
i = i ^ j;
j = i ^ j;
i = i ^ j;
```

(d) All of these

Q.31 Consider the following program.

```
variable I;
procedure K1 (var I )
    begin
        print (– –I );
    end
procedure K2 (var m)
    begin
        K1 (m);
    end
begin
    I = 6;
    K2 (I );
    print (I );
    I = I + 2;
    K1 (I );
end
```

If static scoping is used, which of the following is correct output for the above program?

(a) 5, 6, 7 (b) 5, 5, 6

(c) 6, 6, 8 (d) 5, 6, 8

Q.32 Consider the following C program.

```
int x ;
int main( )
{
    int y ;
    //
    //
    {
        int z;
        //
    }
}
```

Which variable has the longest scope in the above program?

(a) x
(b) y
(c) z
(d) All variables have same scope

Q.33 Choose the identical statement.

(a) (*Ptr) → element AND Ptr → element.
(b) (*Ptr) . element AND Ptr → element.
(c) *(Ptr. element) AND Ptr → element.
(d) *Ptr. element AND Ptr → element.

Q.34 For for loop:

for (i = 10; i < 10; ++i)
printf("%d", i &1)
prints

(a) 0101010101 (b) 0111111111
(c) 0000000000 (d) 1111111111

Q.35 Consider the following function

```
int evaluation (int n)
{   if (n <= 2)
    return 1;
    else
    return (evaluation (floor(sqrt (n))) + n);
}
```

What will be returned if n is 100 _____.

Q.36 Let m, n be positive integers. Define $Q(m, n)$ as

$Q(m, n) = 0$, if $m < n$
$Q(m - n, n) + p$, if $m \geq n$

Then $Q(m, 3)$ is (a div b, gives the quotient when a is divided by b)

(a) a constant (b) $p \times$ (m mod 3)
(c) $p \times (m$ div 3) (d) $3 \times p$

Q.37 Consider the following function

```
void function (int * A, int n)
{
    if (n! = 0)
    {
        printf ("%d", A[n - 1]);
        function (A + 1, n - 1);
    }
}
```

Find the third output produced by the function call function (A, 5), and A is an array initially holds {10, 20, 30, 40, 50}.

Q.38 Consider the following program.

```
int i = 1;                          | void f(int x, int y)
int main ()                         | {
{                                   |     y++;
    int a[] = {0, 1, 2};            |     x = 5*i;
    f(a[i], i);                     | }
    printf ("%d", a[i]);
}
```

If above function $f()$ uses "call by name" technique, what is the output printed?

Q.39 Match **column-I** with **column-II**

Column-I

A. float *(*f) ( );
B. float (*f) ( );
C. float (*a) [8];
D. float *(*a) [8];

Column-II

1. a pointer to an array of 8 floats.
2. a pointer to an array of 8-pointer to floats.
3. a pointer to a function that returns float.
4. a pointer to a function that returns a pointer to a float

Codes:

	A	B	C	D
(a)	4	3	1	2
(b)	3	4	1	2
(c)	4	3	2	1
(d)	None of these			

Q.40 Which of the following is the correct output for the 'C' program given below?

```
# include < stdio.h>
int main()
{
    int arr [3] = {2, 3, 4};
    char *p;
    p = (char*) arr;
    printf ("%d", *p);
    p = p+1;
    printf ("%d\n", *p);
    return 0;
}
```

(a) 2 3 (b) 2 0
(c) 1 0 (d) Garbage values

Q.41 Consider the following function

```
void Zigzag (int * A, int n)
{
    if (n! = 0)
    {
        printf ("%d", A[n - 1]);
        Zigzag (A + 1, n - 1);
    }
}
```

What is the 3rd output produced by the function call Zigzag (A, 5), and A is an array initially holds {10, 20, 30, 40, 50}.

Q.42 What is the output of the following C program?

```
# include < stdio.h>
int f (int*a, int n)
{   if (n == 1) return 1;
    else if (*a % 2 == 0)
    return (*a + f (a + 1, n - 1));
    else return (*a × f (a + 1, n - 1));
}
int main ( )
{   int a[ ] = {10, 5, 20, 2, 3, 1};
    printf ("%d", f (a, 4));
    return 0;
}
```

■■■■

26 ⇒

```
int fun(int x, int y)        x=1, y=3
{
    if (x==0 && y>=0)
        return y+1;
    else if(x>0 && y==0)
        return f(x-1, 1);
    else if(x>0 && y>0)
        return f(x-1, f(x, y-1));
}
```

5

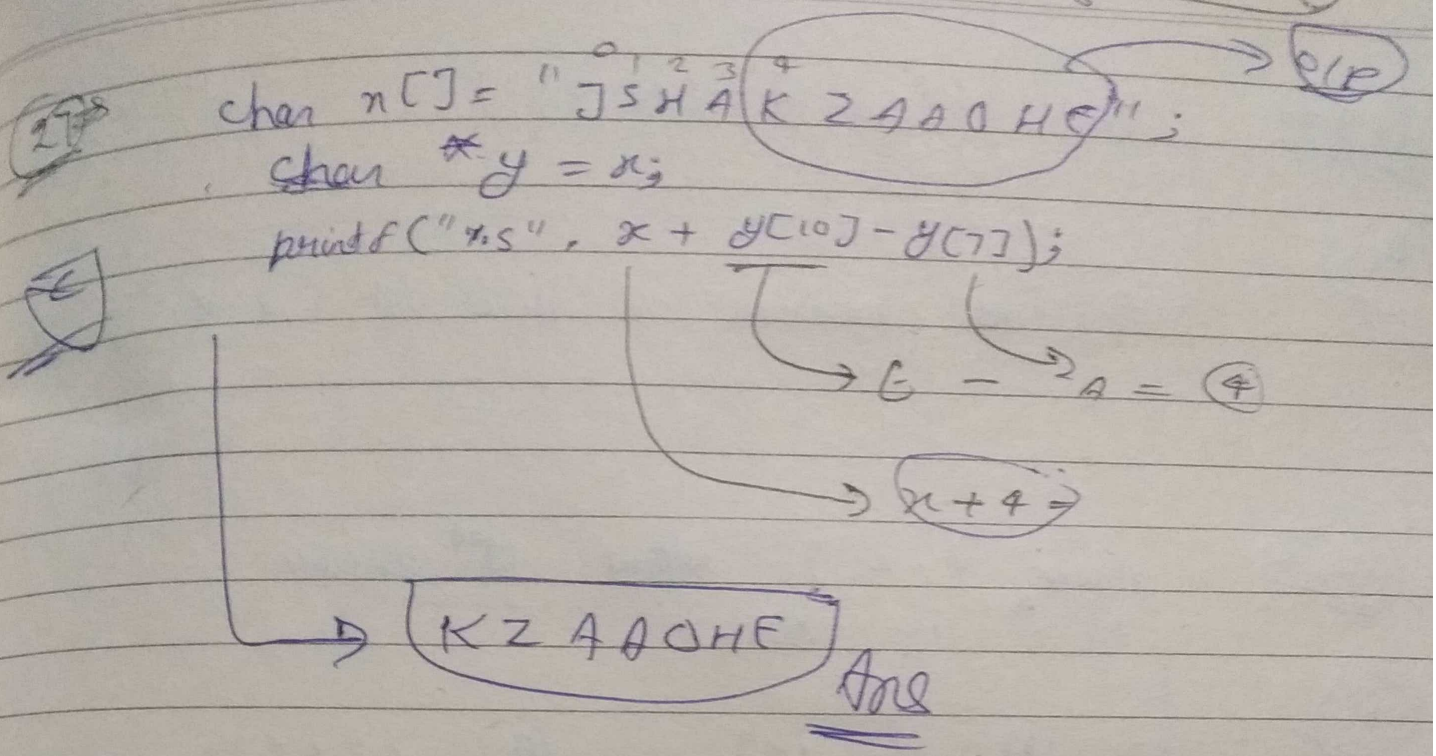
$f(1,3) = f(0, f(1,2)) = f(0, f(0, f(1,1)))$

$= f(0, f(0, f(0, f(1,0)))) = f(0, f(0, f(0, f(0,1))))$

$= 5$ Ans

2 3 4 5

27) char x[] = "JSHAKZAAOHE";
char *y = x;
printf("%s", x + y[10] - y[7]);



28) C

```
int Do ( char *gate)
{
    char *gate1 = gate;
    char *gate2 = gate + strlen(gate) - 1;
    while ( gate1 < gate)
    {
        if (*gate1 ++ != *gate2 --)
            return 0;
    }
    return 1;
}
```

Check wheather the string is palindrome.

Ans

29 ⇒ j + ((i-j) & -(i<j)))

B ↳ Find minimum of two int (i & j)

30 ⇒ swap i & j without 3rd variable —
(^ is XOR)

B ↳ (A) i = i+j
j = i-j
i = i-j

(B) i = i*j
j = i/j
i = i/j

(C) i = i^j
j = i^j
i = i^j

(D) All

31 ⇒ variable i;
procedure K1 (var i)
begin
print(--i);
end
procedure K2 (var m)
begin
K1(m)
end
begin
i=6; K2(i); print(i); i=i+2; K1(i);
end

A ↳ 5, 6, 7

32 ⇒ (A)

```
int x;
int main()
{   int y;
    { int z;
    }
}
```

longest scope Variable = x

33 ⇒ (B)

Identical statement —

(*Ptr) element ✗ Ptr → element

Ans

34 ⇒ (B)

```
for( i=10 ; i<10; ++i)
    printf ("%d", i%1);
```

0 1 1 1 1 1 1 1 1 1

35 ⇒ (D)

```
int evaluation ( int n)
{ if (n<=2)
      return 1;
  else
      return ( evaluation (floor ( sqrt (n)) ) +n );
}
```

evaluation (100) = 114 Ans

36 ⇒ $Q(m,n) = 0$ if $m < b$

$Q(m-n,n)+P$ if $m \geq n$

8

$Q(m,3) = (a \text{ div } b, -)$

↳ $P \times (m \text{ div } 3)$ Ans

37 ⇒

37 ⇒

```
void function( int *A, int n)
{
    if (n!=0)
    { printf("%d", A[n-1]);
      function ( A+1, n-1);
    }
}
```

50

(10, 20, 30, 40, 50)

Function (A, 5)

↳ 50 Ans

38 ⇒

```
int i = 1;
int main()
{ int a[] = {0,1,2};
  f(a[i], i);
  printf("%d", a[i]);
}
```

```
void f( int x, int y)
{ y++;
  x = 5*i;
}
```

10

↳ call by name f() ⇒ 10 Ans

(39) ⇒

Column-I	Column-II
(A) float *(*f)();	(1) a pointer to an array of 8 float
(B) float (*f)();	(2) a pointer to array of 8-pointer to float
(C) float (*a)[8];	(3) a pointer to f^n that return float
(D) float *(*a)[8];	(4) a pointer to f^n that returns a pointer to a float

A

A → 4
B → 3
C → 1
D → 2

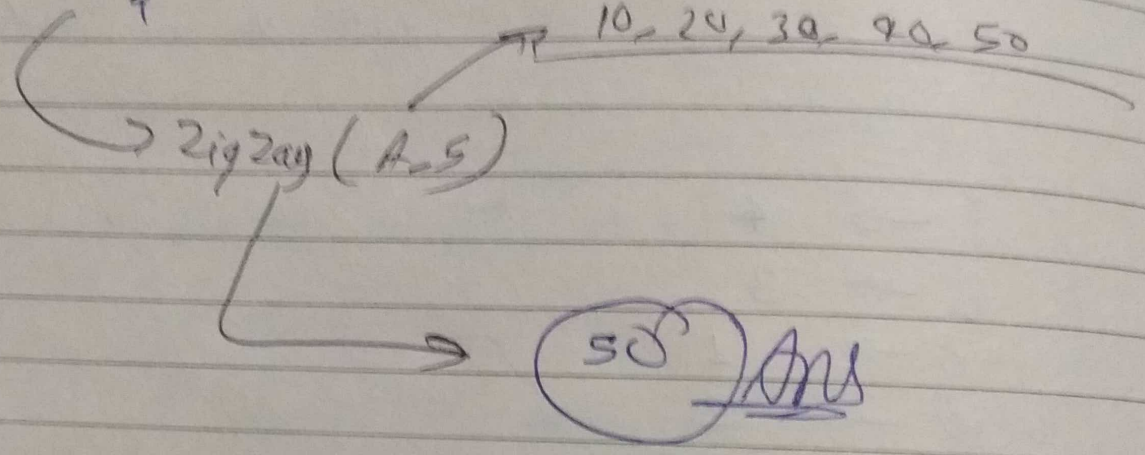
(40) ⇒

B

```
#include<stdio.h>
int main()
{ int arr[3] = {2, 3, 4};
  char *p;
  p = (char*) arr;
  printf("%d", *p);
  p = p+1;
  printf("%d", *p);
  return 0;
}
```

2, 0

```
void ZigZag (int *A, int n)
{
    if(n!=0)
    { printf("%d", A[n-1]);
      ZigZag (A+1, n-1);
    }
}
```




```
#include <stdio.h>
int f (int *a, int n)
{
    if (n==-1) return 1;
    else if (*a %2 == 0)
        return (*a + f(a+1, n-1));
    else
        return (*a * f(a+1, n-1));
}
int main()
{ int a[] = {10, 5, 20, 2, 3, 1};
  printf("%d", f(a, 4));
  return 0;
}
```

10 + [5 * (2 + 1)]