1. What is the value of x after `x=5; x++;`?

A) 5
B) 6
C) 4
D) Error

Ans: x++ is a post-increment operator, which means it increments x to 6 after the current statement is executed

2. What is the value of X after `X=5; ++x;`

A) 5
B) 6
C) 4
D) Error

Ans: ++x is 6.
Initially x = 5. the operation ++x is a pre-increment, this means it increments x by 1 before using its value. so, ++x will increment x from 5 to 6.

3.
```
#include <stdio.h>
int main(){
    int i = 0;
    int x = i++, y = ++i;
    printf("%d %d \n", x, y);
    return 0;
}
```

Answer: 0, 2

i++ is a post-increment operation, so x is assigned the value of i is 0, and then i is incremented to 1.

++i is a pre-increment operation, so i is incremented to 2.

4.
```
#include <stdio.h>
int main(){
    int i = 10;
    int *p = &i;
    printf("%d\n", *p++);
}
```

Ans: 10

- int i = 10; declares and initializes an integer value.
- int *p = &i; declares a pointer p and assigns it the address of i.
- printf("%d\n", *p++); prints the value pointed to by p which is 10.

5. #include <stdio.h>
```
void main(){
    int x = 97;
    int y = sizeof(x++);
    printf("x is %d", x);
}
```
Ans: x is 97

since sizeof() is evaluated at compile time, the x++ does not affect the value of x during execution.

6. #include <stdio.h>
```
void main(){
    int x = 4, y, z;
    y = --x;
    z = x--;
    printf("%d %d %d", x, y, z);
}
```
Ans: 2 3 3

In the program, --x (pre-decrement) decreases the value of x before assignment, while x-- (post-decrement) decreases the value of x after assignment.

Thus, the values of x, y and z are 2, 3, and 3.

7. #include <stdio.h>
```
void main(){
    int x = 4;
    int *p = &x;
    int *k = p++;
    int r = p-k;
    printf("%d", r); }
```

Ans: 1

When performing operations on pointers, a scaling factor is applied, which equals the size of the data type the pointer points to. So, the address is incremented by 4 using.

8) #include <stdio.h>
int main(){
int x=5;
int y=x++;
printf("%d %d\n", x, y);
return 0;
}

Ans: 6 5

In "int y=x++;" the value of x is 5 is first assigned to y. Then, x is incremented to 6.

9) #include <stdio.h>
int main(){
int a=10;
int b=--a;
printf("%d %d\n", a, b);
return 0;
}

Ans: 99

The statement int b=--a; uses the pre-decrement operator (--a). This operator first decrements the value of a by 1 and then assigns the new value to b

a=9
b=9.

6) If x=8, what is the value of x<<=3?

Ans: 64

The <<= operater is a compound assignment operator for left shift. x<<=3 is equivalent to x=x<<3.

11) What is the value of x after x=5; x--;?

Ans: 4

x-- decrements x to 4 after the current statement is executed

12)
```
#include <stdio.h>
int main() {
    int a = 5;
    int b = a++;
    printf("%d %d\n", a, b);
    return 0;
}
```

Ans: 6 5

In b = a++, the value of a is 5 is first assigned to b then, a is incremented to 6.

13)
```
int i = 3;
int result = (i++ * 2) + (++i * 3);
```

Ans: undefined behaviour

the expression (i++ * 2) + (++i * 3) involves multiple modifications to i without a sequence point in between leading to undefined behaviour according to the c.

The order of evaluation i++ and ++i is not guaranted

14)
```
#include <stdio.h>
int main() {
    int p = 7;
    printf("%d\n", p--);
    printf("%d\n", p);
    return 0;
}
```

Ans: 7 6

In printf("%d\n", p--), the current value of p is 7 is printed. then p is decremented to 6. The second printf statement then prints the undated value of p.

A 15. What is the result of the expression 6<<2 ?

a) 2 b) 4 c) 16 d) 24

Sol:- 6<<2

= 6 * 2^2

= 6 * 4

= 24