

Part 2: Writing the Code

- Q.1. Write a single C statement to initialize two integer variables start and end to 0.
`int start = 0, end = 0;`
- Q.2. Initialize three integer variables named Test1, Test2, and Test3 and assign them the values of 76, 92, and 85, respectively (in a single statement).
`int Test1 = 76, Test2 = 92, Test3 = 85;`
- Q.3. Write a statement to declare an integer variable i initialized to 10.
`int i = 10;`
- Q.4. Write a declaration statement and an assignment statement to assign 30 meter to a variable named length.
`int length;
length = 30;`
- Q.5. Declare two integer variables testNumber and testScore in one declaration statement.
`int testNumber, testScore;`
- Q.6. Write a C constant declaration that gives the name PI to the value 3.142.
`const float PI = 3.142;`
- Q.7. Write the following expression in C language:
 $a = 2bc^3$
Ans: `a = 2 * b * c * c * c`
- Q.8. Write the following expression in C language:

$$\frac{x^2 - 5x + 1}{2x + 3}$$

Ans: `(x*x - 5*x + 1) / (2*x + 3)`
- Q.9. Write the following expression in C language:

$$x = \frac{3y}{5 - z}$$

Ans: `x = (3 * y) / (5 - z)` OR `x = 3 * y / (5 - z)`
- Q.10. Write an expression in C language for the following:
Number is divisible by 3
Ans: `(Number % 3) == 0`
- Q.11. Write the following expression in C language:
 $Ke = 1/2mv^2$
Ans: `Ke = 1 / 2 * m * (v * v);`
- Q.12. Write the following expression in C language:
 $z = \text{area} \sqrt{\text{area}}$
Ans: `z = area * sqrt(area);`
- Q.13. Rewrite the expression `x+=2;` without using compound assignment operator.
`x = x + 2;`
- Q.14. Rewrite the expression `n++;` without using the operator `++`.
`n = n + 1;`

- Q.15. Rewrite the expression `result = result / 2;` using compound assignment operator.
`result /= 2;`
- Q.16. Write the following statement in C code: p and q are less than zero
`(p < 0) && (q < 0)`
- Q.17. Write the following statement in C code:
 score is between 50 and 60 inclusive
 Ans: `(score >= 50) && (score <= 60)`
- Q.18. Write the following statements as single statement.
`int x = 5;`
`int y = 10;`
`int z = 15;`
 Ans: `int x = 7, y = 16, z = 28;`

Part 3: Determining the Output

- Q.1. Determine the output of the following code segment:

a. <pre>int num = 10; num += 5; num - = 2; num *= 3; printf("%d", num);</pre> Ans: 39	b. <pre>void main() { int i = -5; int k = i % 4; printf("%d\n", k); }</pre> Ans: -1
c. <pre>int x=3; printf("%d", x); printf("%d", x++); printf("%d", ++x);</pre> Ans: 335	d. <pre>int i = 3; int j = i++; int k = ++i; printf("%d %d %d\n", i, j, k);</pre> Ans: 5 3 5
e. <pre>int number = 6; int x = 0; x = number--; printf("%d\n", x)</pre> Ans: 6	f. <pre>int number = 6 int x = 0; x = --number; printf("%d\n", x);</pre> Ans: 5
g. <pre>int number = 6; number++; printf("%d\n", number)</pre> Ans: 7	h. <pre>int number = 6; ++number; printf("%d\n", number);</pre> Ans: 7
i. <pre>int x=1; x++; printf("%d ", x++);</pre> Ans: 2	j. <pre>int x = 3; int y = 17; printf("%d %d %d", x/y, y/x, y%x);</pre> Ans: 052

Q.2. Determine the output of the following code segment:

a. <pre>int x = 13; int y = 3; printf("%d %d %d", x/y, y/x, x%y);</pre> Ans: 401	b. <pre>int x = 7; int y = 3; printf("%d and %d", x/y, x%y);</pre> Ans: 2 and 1
c. <pre>int x=20,y=35; x = y++ + x++; y = ++y + ++x; printf("%d%d",x,y);</pre> Ans: 5794	d. <pre>int x=10, y=15; x = x++; y = ++y; printf("%d %d",x,y);</pre> Ans: 11 16
e. <pre>int a,b; a=77; b=40; a+=b; printf("a=%d",a);</pre> Ans: a = 117	f. <pre>int i, j, z; i=10; j=3; z=i%j; printf("%d",z);</pre> Ans: 1
g. <pre>int n, a, b; n = 500; a = n % 100; b = n / 10; n = n % 10; printf("%d %d %d", n, b, a);</pre> Ans: 0500	h. <pre>int i=12; int j=46; int k=56; printf("i=%d ",i); printf("j=%d ",j); printf("k=%d ",k);</pre> Ans: i=12 j=46 k=56
i. <pre>int x = 4 * 5 / 2 + 9; printf("%d", x);</pre> Ans: 19	j. <pre>int x = 3; printf("%d%d",x,2*x);</pre> Ans: 36

Q.3. Find out of the result of the following expression:

$$10 * (24 / (5 - 2)) + 13$$

Ans: 93

Q.4. Find out of the result of the following code:

```
int x=5;
printf("%d,%d,%d",x,x*4,x%4);
```

Ans: 5,20,1

Q.5. What is the value of y after the following code executes:

```
float y = 3.4 + sqrt (25.0);
```

Ans: 8.4

Q.6. Find the result of the following expression if a and b are integers and b = 12?

$$a = 7.8 + b / 5;$$

Ans: 9

Q.7. What does this program fragment print?

```
int a, b, c, d;  
a = 4;  
b = 2;  
c = (a + b) / (a - b);  
d = a * b - a / b;  
printf("c=%d\n", c);  
printf("d=%d\n", c);
```

Ans:

c=3

d=6

Q.8. Suppose a=15 and a+=3 is executed. What is new value of a?

Ans: 18

Q.9. What are the values of x and y after execution of the following statements?

x = 5;

y = ++x;

Ans: x = 6, y = 6

Q.10. What will the value of x be after the following statements execute?

int x = 0;

int y = 5;

int z = 4;

x = y + z * 2;

Ans: 13

Q.11. What will be the value of z after executing the following statements?

int x;

z = 18.0 / 4;

Ans: 4.5

Q.12. What is the final value of i in the following code?

int i = 40;

i /= (i / 4 + 70);

Ans: 0

Q.13. Write the output of the following statement:

a. (7%2) * (++x) where x = 2

Ans: 3

b. (n<10) || (n>25) where n = 25

Ans: 0 (False)

c. a || b && c where a=5, b=10, c=15

Ans: 1 (True)

Q.14. Write the output of the following statement:

a. (x<y) && (z=5) where x=10, y=15, z=5

Ans: 1 (True)

b. (x>y) || (z=5) where x=0, y=15, z=5

Ans: 1 (True)

Q.15. Find the value of:

a. (i>0) && (j<5) where i=8, j=5

Ans: 0 (False)

b. (x+y) / x-y where x=2, y=4

Ans: -1

c. a*3/(b*a) where a=4, b=2

Ans: 1

Q.16. What is the value of x be after the following statements execute?

int x = 0;


```
int y = 5;
int z = 10;
x = y + z + 5;
Ans: 20
```

Q.17. What is the output of the following?

```
int x = 25;
int y = 4;
printf("%d", x / y);
printf("%d", y / x);
printf("%d", x % y);
Ans: 601
```

Q.18. What is the output of the following?

```
int i = 5;
printf("%d %d %d", i, i++, ++i);
Ans: 5 5 7
```

Part 4: Finding the Errors

Q.1. Find errors in the following code segment:

```
int a, b, c, d;
char grade;
a = 10;
b = "20";
c = 30
grade = A;
Ans:
```

1. The value 20 in fourth line should be written without double quotes.
2. The fifth line must end with semicolon.
3. The value A in the last line must be in single quotes.

Q.2. Find errors in the following code segment:

```
integer x, y, sum,
z = x + y;
printf("Sum = %d", z);
Ans:
```

1. The data type in first line must be int instead of integer.
2. The first line must end with semicolon.
3. The variable z must declared.

Q.3. Find errors in the following code segment:

```
int a b;
a = 10
b == 5;
printf("a + b = %c", a + b);
Ans:
```

1. The variables a and b in first line must be separated with comma.
2. The == operator in third line must be replaced with =.
3. The format specifier %c in the last line must be replaced with %d.

Q.4. Find errors in the following code segment:

```
int x, y;
0 = x = y;
x++;
y = x;
printf("Result = %d", "x+y");
```

Ans:

1. The expression in second line is wrong as variable cannot be assigned to constant.
2. The operator +++ in third line is wrong and must be written as ++.
3. The expression x+y in the last line must be written without double quotes.

Q.5. Find errors in the following code segment:

```
Float a, b;
int c;
a = 10.3;
b = 5.2;
c = <int>a % (int)b;
printf("%d"; c);
```

Ans:

1. The word "Float" in the first line must be written in lowercase.
2. The <int> in the fourth line must be replaced with (int).
3. The semicolon after "%d" in the last line must be replaced with comma.

Multiple Choice Questions

1. A memory location with some data that can be changed is called:
 - a. Constant
 - b. Variable
 - c. Named constant
 - d. Address
2. Variables are created in:
 - a. RAM
 - b. ROM
 - c. Hard disk
 - d. USB
3. A memory location with some data that cannot be changed is called:
 - a. Constant.
 - b. Variable.
 - c. Keyword
 - d. Address
4. Which of the following is a valid character constant?
 - a. a.
 - b. "Hello"
 - c. '6'
 - d. =
5. Which of the following operators has lowest precedence?
 - a. !
 - b. +
 - c. =
 - d. ==
6. C is strongly typed language, it means that:
 - a. Every program must be compiled before execution
 - b. Every variable must be declared before it is being used
 - c. The variable declaration also defines the variable
 - d. Sufficient data types are available to manipulate each type of data
7. a += b is equivalent to:
 - a. b += a
 - b. a = +b
 - c. a = a + b
 - d. b = b + a