Revision Questions

Choose the correct answer:

1. Which C++ line correctly displays the text "Hello World" followed by the value of an integer variable x?
   a) cout << x, "Hello World";
   b) cout ("Hello World") << x;
   c) cout >> "Hello World" >> x;
   d) cout << "Hello World" << x;

2. Which statement represents a valid variable declaration and initialization?
   a) myNum int = 20;
   b) int 20myNum;
   c) const myNum;
   d) int myNum = 20;

3. If sum1 = 150 and sum2 = 400, what is the result of the expression:
   int sum3 = sum2 + sum2;
   a) 150
   b) 400
   c) 550
   d) 800

4. What is the output of the following code?

```
int main() {
  myFunction();
  return 0;
}

void myFunction() {
  cout << "I just got executed!";
}
```

   a) I jusy got executed!
   b) Null
   c) Error
   d) None of the above

5. What will be the output of the following C++ code?

```
string firstName = "John";
string lastName = "Doe";
string fullName = firstName + lastName;
cout << fullName;
```

   a) John
   b) Doe
   c) JohnDoe
   d) John Doe

6. What is the output of the following code?

```
void myFunction(string fname) {
  cout << fname << " Mohamed\n";
}

int main() {
  myFunction("Ahmed");
  return 0;
}
```

   a) Ahmed
   b) Mohamed
   c) Error
   d) Ahmed Mohamed

7. The & (ampersand) symbol used in a parameter (e.g., int &x) implements which method of passing data?
   a) Pass by Value.
   b) Pass by Constant.
   c) Pass by Array.
   d) Pass by Reference.

8. To get the length of a string, which functions can you use?
   a) size() only
   b) length() only
   c) len() only
   d) Both size() and length()

9. What is the final value of x after the following operations? int x = 10; x += 5;
   a) 5.
   b) 10.
   c) 50.
   d) 15.

10. What will the output of the following code snippet?

```
for (int i = 0; i < 7; i++) {
  if (i == 4) {
    continue;
  }
  cout << i << "\n";
}
```

   a) 0 1 2 3 4
   b) 0 1 2 3 5 6
   c) 0 1 2 3 4 5 6
   d) 1 2 3 5 6

11. What will the output of the following code snippet?

```
int i = 0;
while (i < 7) {
  cout << i << "\n";
  i++;
  if (i == 4) {
    break;
  }
}
```

a) 0
1
2
3

b) 0
1
2
3
5
6

c) 0
1
2
3
4
5
6

d) 1
2
3
4

12. The output for this code is _____.

```
int numbers[5] = {7, 5, 6, 12, 35};
cout << "numbers[5]";
```

a) 7 5 6 12 35
b) The numbers are: 7561235
c) numbers[5]
d) Undefined Behavior

13. The output for this code is _____.

```
int numbers[5] = {7, 5, 6, 12, 35};
cout << numbers[5];
```

a) 7 5 6 12 35
b) The numbers are: 7561235
c) numbers[5]
d) Undefined Behavior

14. What will be the output of the following C++ code?

```
#include <iostream>
#include <string>
using namespace std;
int main()
{
  char s1[6] = "Hello";
  char s2[6] = "World";
  char s3[12] = s1 ;
  cout<<s3;
  return 0;
}
```

a) Hello

b) World
c) Error
d) Hello World

15. What will be the output of the following C++ code?

```
string txt = "ABCDE FGHIJKLMNOPQRSTUVWXY";
cout << "The length of the txt string is: " << txt.length();
```

a) 27
b) 26
c) The length of the txt string is: 26
d) The length of the txt string is: 27

16. What will be the output of the following C++ code?

```
int time = 10;
string result = (time < 18) ? "Good day." : "Good evening.";
cout << result;
```

a) Good evening.
b) Error
c) Good day.
d) Good day. : Good evening.

17. What will be the output of the following C++ code?

```
int time = 20;
string result = (time < 18) ? "Good day." : "Good evening.";
cout << result;
```

a) Good evening.
b) Error
c) Good day.
d) Good day. : Good evening.

18. What will be the output of the following code snippet?

```
int main() {
   int a[] = {1, 2, 3, 4, 5};
   int sum = 0;
   for(int i = 0; i < 5; i++) {
           sum += a[i];
   }
   cout << sum << endl;
   return 0;
}
```

a) 5
b) 15
c) 9
d) 6

19. Q17. What will be the output of the following code snippet?

```
int main() {
    int a[] = {1, 2, 3, 4, 5};
    int sum = 0;
    for(int i = 0; i < 5; i++) {
        if(i % 2 == 0) {
            sum += a[i];
        }
    }
    cout << sum << endl;
    return 0;
}
```

a) 5
b) 15
c) 9
d) 6

20. What will the output of the following code snippet?

```
int main() {
    int a[] = {1, 2, 3, 4, 5};
    int sum = 0;
    for(int i = 0; i < 5; i++) {
        if(i % 2 == 0) {
            sum += *(a + i);
        }
        else {
            sum -= *(a + i);
        }
    }
    cout << sum << endl;
    return 0;
}
```

a) 2
b) 15
c) Syntax error
d) 3

21. The output for this code is _____.

```
int numbers[5] = {7, 5, 6, 12, 35};
cout << "The numbers are: ";
// Printing array elements
for (int i = 0; i < 4; ++i) {
        cout << numbers[i] << "  ";
}
```

a) 7 5 6 12 35
b) The numbers are: 7 5 6 12
c) The numbers are: 7 5 6 12 35
d) The numbers are: 7 5 6 12

22. The output for this code is _____.

```
int numbers[5] = {7, 5, 6, 12, 35};
cout << "The numbers are: ";
// Printing array elements
for (int i = 0; i < 5; ++i) {
        cout << numbers[i] << "  ";
}
```

a) 7 5 6 12 35
b) The numbers are: 7561235
c) The numbers are: 7 5 6 12 35
d) The numbers are: 7 5 6 12

23. What is the output of the following code?

```
void myFunction(string name = "Asser") {
  cout << name << " ";
}

int main() {
  myFunction();
  return 0;
}
```

a) ------ Asser
b) Asser -------
c) Asser
d) none

24. In the statement int myNum = 15;, what is int?

a) The value.
b) The variable name.
c) A constant.
d) The data type.

25. If you try to assign a new value to a variable declared with the const keyword, what will happen?

a) The new value will override the old one.
b) The program will use the new value but issue a warning.
c) The old value will be kept silently.
d) A compilation error occurs, as it's a read-only variable.

26. In C++, we can use arrays to maintain a collection of data elements of different types.

a) True
b) False

27. How is an array initialized in C++ language?
    a) int a[3]={1,2,3};
    b) int a={1,2,3};
    c) int a[]=new int[3];
    d) int a(3)=[1,2,3];

28. Which of the following correctly declares an array in C++?
    a) array{10};
    b) int array[10];
    c) array array[10];
    d) int array;

29. To declare a two-dimensional array of strings with 2 rows and 4 columns, which of the following declarations is correct?
    a) string letters[2][4];
    b) string letters(2, 4);
    c) string letters[2,4];
    d) string letters{2}{4};

30. How do you correctly declare a two-dimensional array of floats with 3 rows and 2 columns?
    a) float arr[3][2];
    b) float arr(3)(2);
    c) float arr[2][3];
    d) float arr[3,2];

31. In the declaration string letters[2][4], how many total string elements can the array store?
    a) 2
    b) 4
    c) 6
    d) 8

32. Multiple functions can have the same name as long as the number and/or type of parameters are different. This is called _____.
    a) Inheritance
    b) Encapsulation
    c) Overloading
    d) Recursion

33. What will the output of the following code snippet?

```
int i = 0;
do {
  cout << i << " ";
```

```
  i++;
}
while (i <= 5);
```

a) 0 1 2 3 4
b) 0 1 2 3 4 5
c) 0 1 2 3
d) 1 2 3 4 5

34. Given string myString = "Hello";, what is the output after executing myString[0] = 'J'; cout << myString;?
    a) Hello
    b) H
    c) J
    d) Jello

35. If a switch statement is provided with a floating-point number (e.g., 3.14) as its expression, what will happen?
    a) The switch will automatically convert it to an integer.
    b) The code will execute normally.
    c) The default case is always executed.
    d) A compilation error will occur, as switch only works with integer-like types.

36. Given int x = 20; int y = 18; if (x > y) { cout << "A"; } else if (x == 20) { cout << "B"; } else { cout << "C"; }, what is the output?
    a) B
    b) C
    c) A B
    d) A

37. What will be the output of the following C++ code?

```
int d = 75;
string grade = (d < 60) ? "Fail." : "Pass.";
cout << grade;
```

a) Fail.
b) Pass.
c) Error.
d) Fail. : Pass.

38. What does the expression (x < 5) || (x > 10) evaluate to if x is 7?
    a) true

b) 7
c) A runtime error
d) false

39. Which statement is used to jump out of a loop immediately?

a) continue
b) exit
c) goto
d) break

40. The following syntax is invalid as you cannot pass arrays to a function:

```
void myFunction(int myNumbers[5]) {
  for (int i = 0; i < 5; i++) {
    cout << myNumbers[i] << "\n";
  }
}

int main() {
  int myNumbers[5] = {10, 20, 30, 40, 50};
  myFunction(myNumbers);
  return 0;
}
```

a) True
b) False

41. The output for this code is _____.

```
int myNumbers[5] = {10, 20, 30, 40, 50};
int getArrayLength = sizeof(myNumbers) / sizeof(int);
cout << getArrayLength;
```

a) 20
b) 5
c) 4
d) 2.5

42. The output for this code is _____.

```
  string letters[2][4] = {
  { "A", "B", "C", "D" },
  { "E", "F", "G", "H" }
};
cout << letters[0][2];
```

a) A
b) C
c) B
d) Undefined Behavior

43. The output for this code is _____.

```
  string letters[2][4] = {
  { "A", "B", "C", "D" },
  { "E", "F", "G", "H" }
};
cout << letters[2][2];
```

a) A
b) F
c) B
d) Undefined Behavior

44. The output for this code is _____.

```
  string letters[2][4] = {
  { "A", "B", "C", "D" },
  { "E", "F", "G", "H" }
};
letters[0][0] = "Z";
cout << letters[0][0];
```

a) A
b) E
c) Z
d) Undefined Behavior

45. An array is initialized as int values[5] = {1, 2, 3};. What value will the compiler assign to values[3]?
a) 3
b) A garbage value
c) 4
d) 0

46. What is the output of the following loop? for (int i = 0; i < 5; i++) { if (i == 3) { break; } cout << i << " "; }
a) 0 1 2 3 4
b) 3 4
c) 0 1 2 4
d) 0 1 2

47. What is the output of the following loop? for (int i = 0; i < 5; i++) { if (i == 3) { continue; } cout << i << " "; }
a) 0 1 2 3 4
b) 3

c) 0 1 2
d) 0 1 2 4

48. What is the index of the first element in any C++ array?
    a) 1
    b) -1
    c) The array size
    d) 0

49. Given the array initialization: int arr[2][3] = {{1, 2, 3}, {4, 5, 6}}; What is the value of the element at arr[1][2]?
    a) 1
    b) 4
    c) 5
    d) 6

50. In the array string letters[2][4] = { { "A", "B", "C", "D" }, { "E", "F", "G", "H" }};, the expression letters[1] refers to:
    a) The string "E"
    b) The first character 'E'
    c) The entire 2D array
    d) The second array/row: {"E", "F", "G", "H"}

Programming Exercises:

1. Write a C++ program to **ask the user to enter two numbers (x and y), then calculate and display the result of the expression 3x^2 + 2y - 5 .**
2. Write a C++ program that **asks the user to enter their age. If the age is 18 or more, print "You are an adult." If the age is between 13 and 17, print "You are a teenager." Otherwise, print "You are a minor."**
3. Write a C++ program to **let the user enter two numbers and an operator (+, -, *, /). Use a switch statement to perform the chosen operation and display the result, including a case for division by zero.**
4. Write a C++ program to **use a loop to find the sum of positive numbers, repeating the input until the user enters 0 or a negative number. Display the final sum.**
5. Write a C++ program to **ask the user to enter a number (n) and calculate and display the factorial of that number.**
6. Write a C++ program to **print the sequence of even numbers from 2 up to 20, using a for loop.**
7. Write a C++ program to **display the sum of numbers from a starting number n1 to an ending number n2 (where n1 < n2), using a while loop.**
8. Write a C++ program to **declare an integer array of size 5, prompt the user to enter 5 values into the array, and then print all the elements of that array.**
9. Write a C++ program to **define the array (5, 7, 9, 4, 88), find the sum and the average of all the elements in the array, and display both results.**
10. Write a C++ program to **define an array of integers and find the sum of all the even numbers within the array.**
11. Write a C++ program to **define a function that takes two integer numbers, returns the maximum value between them, and demonstrate calling this function.**
12. Write a C++ program to **define a function that calculates and prints the area of a rectangle, and demonstrate calling this function with user-defined width and height.**
13. Write a C++ program to **define a function that returns the sum of two floating-point numbers, and demonstrate calling this function by printing the result.**
14. Write a C++ program to **define a function that takes two variables by reference and swaps their values, and demonstrate calling this function by printing the values before and after the swap.**