6 – Introduction to Programming

1. Explain two ways to write comments in C ++. **[March 2020, Score 2]**

Ans. There are two types of comments in C++.

i. Single line comment: This type of comment deactivates only that line where comment is applied. Single line comments are applied with the help of " // " .

ii. Multi-line Comment: This Type of comment deactivates group of lines when applied. This type of comments are applied with the help of the operators "/*" and "*/ ". These comment mark with /* and end up with */.

2. Consider the following C++ code: **[March 2020, Score 3]**

```
int x = 5 , y = 2 ;
float z;
z = x / y ;
cout << z ;
```
Write the output of the above code. Justify your answer.

Ans. Output is 2. Since x and y are int, the result will also be an integer (int / int is int).

3. What is meant by type modifier ? Explain any two type modifiers in C++.

[March 2020, Score 3]

Ans. Type modifiers are the keywords used to alter the size, range or precision of data supported by the basic data types. It alters the range of values by altering the memory size. Important modifiers are signed, unsigned, long and short.

4. Explain the importance of main ( ) function in C++ programs. **[July 2019, Score 2]**

Ans. Every C++ program consists of a function named main ( ). It's an essential function in every C++ program. The compilation and execution starts at main ( ) and ends within main( ).

5. Explain type modifiers in C++. **[July 2019, Score 3]**

Ans. Type modifiers are the keywords used to alter the size, range or precision of data supported by the basic data types. It alters the range of values by altering the memory size. Important modifiers are signed, unsigned, long and short.

6. (a) Differentiate Type Promotion and Type Casting. **[July 2019, Score 3]**

(b) Write a C++ program to find sum of two given numbers. **[July 2019, Score 2]**

Ans. a) Type promotion is the implicit type conversion which is performed by C++ compiler internally. C++ converts the lower sized operands to the data type of highest sized operand. The conversion is always from lower type to higher and hence the name type promotion.

Type casting is the explicit type conversion and is done by the programmer by specifying the data type within parentheses to the left of the operand.

b)
```
#include<iostream>

using namespace std;

int main ( )

{

        int num1,num2,sum ;

        cout<<"Enter two numbers:" ;

        cin>>num1>>num2 ;

        sum = num1+num2;

        cout<<"Sum = "<<sum;

        return 0;

}
```

7. The starting symbol of a pre - processor directive statement is ..... **[March 2019, Score 1]**
Ans. #

8. What is the use of comments in a program? List out two ways to include comments in C++ program. **[March 2019, Score 2]**
Ans. There are two types of comments in C++.

i. Single line comment: This type of comment deactivates only that line where comment is applied. Single line comments are applied with the help of " //" .

ii. Multi-line Comment: This Type of comment deactivates group of lines when applied. This type of comments are applied with the help of the operators "/*" and "*/ ". These comment mark with /* and end up with */.

9. List out type modifiers in C++. **[March 2019, Score 2]**
Ans. Type modifiers are the keywords used to alter the size, range or precision of data supported by the basic data types. It alters the range of values by altering the memory size. Important modifiers are signed, unsigned, long and short.

10. a) What is constant? **[March 2019, Score 2]**

b) Write the keyword for constant declaration in C++.

c) Give an example.

 Ans. a) Constants are the values whose value can never be changed during execution.

b) const

c) Eg: const float pi=3.14; the value of pi remains constant (unaltered) throughout the execution of the program.

11. C++ program execution starts and ends within .... function.   **[July 2018, Score 1]**
   Ans. main ( )

12. Explain implicit and explicit type conversion with suitable examples. **[July 2018, Score 3]**
   Ans. Type promotion is the implicit type conversion which is performed by C++ compiler internally. C++ converts the lower sized operands to the data type of highest sized operand. The conversion is always from lower type to higher and hence the name type promotion.

   Eg:- 5 / 2.0   results 2.5

   Type casting is the explicit type conversion and is done by the programmer by specifying the data type within parentheses to the left of the operand.

   Eg:- sum = (float) 5 + 7 ; results 12.0

13. a) Consider the structure of C++ program given below and answer the following question.
```
#include<iostream>                                    [July 2018 ]
 using namespace std;
int main( )
{
statements;
:
:
}
```
Which is the pre-processor directive statement in the code?   **[Score 1]**

b) Explain the use of header files in a program.   **[Score 2]**

c) Write a C++ Program to print the following message: (Hint : Use only one cout statement). "SMOKING IS INJURIUS TO HEALTH "   **[Score 2]**

" SAY GOODBYE TO DRUGS "

Ans. a) #include<iostream>

b) Header files are the files available along with compiler and they are kept in the standard library. The header files contain the information about functions, objects and predefined derived data types.

c) #include<iostream>

```
using namespace std;

int main ( )

{

        cout<<"SMOKING IS INJURIUS TO HEALTH  \n SAY  GOODBYE TO DRUGS " ;

        return 0;

}
```

14. What is the name of files created to support C++ programs and kept in the standard library.

[March 2018, Score 1]

Ans. Header files.

15. Detect and correct the errors in the following C++ code.　　　　　**[March 2018, Score 2]**

```
#include<iostream>
using name space std;
 int main ( ) ;
{
int a, b ;
cout<<"Enter two numbers: " ;
cin>>a and b;
a + b = c;
cout<<"Sum =  "<<c ;
return 0 ;
}
```

Ans. using name space std;　　-　　using namespace std;

main ( ) ;　　　　　　　　-　　main ( )

cin>>a and b;　　　　　-　　cin>>a>>b;

a + b = c ;　　　　　-　　c = a + b;

16. a) Write the equivalent arithmetic operations for the given C++ short hands. **[March 2018]**

　　i)　　x % = 20 ;

　　ii)　　ii) a + = 2 ;

　　iii)　　iii) p / = 5 ;　　　　　　　　　　　　　**[Score 1 ½]**

　　b) What is the difference between a = 20 and a = = 20?　　　　**[Score 1 ½]**

Ans. a)　i) x = x % 20 ;

　　　　ii) a =a + 2 ;

iii) p = p / 5 ;

   b) a = 20 means assign 20 to the variable a whereas a = = 20 means check whether the

value within a is 20 or not.

17. a) What is a type conversion?   **[March 2018,Score 2]**

   Which are the two ways of type conversion?

   b) Define type casting.   **[Score 2]**

   c) Consider the C++ code   **[Score 1]**

   int p = 7, q = 2 ;

   float a, b;

   a = p / q ;

   b = (a + q) / q ;

   Find the values of a and b.

Ans. a) Type conversion is conversion of the data type of an operand into another type. It is done in two ways: implicitly and explicitly.

   b) Type casting is the explicit type conversion and is done by the programmer by specifying the data type within parentheses to the left of the operand.

   Eg:- sum = (float) 5 + 7 ; results 12.0

   c) a = 3.0 and b = 2.5

18. Write four different C++ statements to add 1 to the value stored in the variable Num.

                                                 [July 2017, Score 2]

Ans.   a++,   ++a,   a = a + 1,   a + = 1

19. Identify six errors in the following C++ program and give a reason for each.

   #include<iostream>   **[July 2017, Score 3]**

   namespace using std;

   int main()

   {

   int a; b;

   cin<<a<<b ;

```
        a+b = s ;

        cout>>s;

    }
```

Ans.   Line 2 – using is not used in the beginning.

              Line 4 – instead of "," ";" is used before b

              Line 5 – wrong symbol for input operation

              Line 6 – s is not declared

              Line 6 – wrong use of assignment

              Line 7 – wrong symbol for output operation

20. If A = 5, B = 4 , C = 3 , d = 4 , then what is the result in X after the following operation ?

    X = a + b – c * d   **[March 2017, Score 3]**

<div align="center">OR</div>

    Is there any difference between (a) and (b) by considering the following statement?

    char Gender ;

    (a) Gender = 'M' ;

    (b) Gender = "M" ;

Ans. X = 5 + 4 – 3 * 4 = 5 + 4 -12   = 9 – 12 =   -3

<div align="center">OR</div>

a) Gender = 'M' indicates that the character constant value 'M' is assigned to the variable Gender. Size of Gender will be 1 Byte.

b) Gender = "M" indicates that string constant value 'M' is assigned to the variable Gender. Size of Gender will be 2 Bytes.

21. Which one of the following is NOT a valid C ++ statement?   **[July 2016, Score 1]**

    a) x = x + 10 ;

    b) x + = 10 ;

    c) x + 10 = x ;

    d) x = 10 + x ;

Ans. c) x + 10 = x

22. Write output of the following C++ program.   **[July 2016, Score 2]**

    #include<iostream>

    using namespace std;

    int main( )

```
{
int a =10 ;
cout<<"\n a = " <<a++ ;
cout<<"\n a = "<<++a;
}
```

Ans.   a = 10

a = 12

23. Comments in a program are ignored by the compiler. Then why should we include comments? Write the methods of writing comments in a C++ program ?

Ans. Comments provide internal documentation of a program. They are lines in code that are added to describe the program. There are two types of comments in C++.

i. Single line comment: This type of comment deactivates only that line where comment is applied. Single line comments are applied with the help of " // " .

ii. Multi-line Comment: This Type of comment deactivates group of lines when applied. This type of comments are applied with the help of the operators "/*" and "*/ ". These comment mark with /* and end up with */.

24. The arithmetic assignment operation Y / = 10 is equivalent to......... **[March 2016, Score 1]**

a) Y=10

b) Y=Y+10

c) Y=Y/10

d) none of these

Ans. Y = Y / 10

25. What is implicit type conversion? Why it is called type promotion?   **[March 2016, Score 3]**

Ans. Type promotion is the implicit type conversion which is performed by C++ compiler internally. C++ converts the lower sized operands to the data type of highest sized operand. The conversion is always from lower type to higher and hence the name type promotion.

26. The following program finds the sum of three numbers. Modify the program to find the average. (Average should display fractional part also).   **[March 2016, Score 2]**

```
#include<iostream>
using namespace std;
int main ( )
{
int x ,y , z, result;
cout<<"Enter values f or x ,y, z" ;
```

```
cin>>x>>y>>z;
result=x+y+z;
cout<<"The answer is ="<<result;
return 0 ;
}
```

Ans. declare a variable avg and write as: avg = result /3.0 and display avg.

27. Explain the difference between float g = 9 . 8 ; and const float g=9.8 ;**[July 2015, Score 2]**

Ans. float g = 9.8 specifies that g is a normal variable and it is initialized with the value 9.8

Const float g = 9.8 specifies that g is a constant type variable and it is initialized with a value 9.8, which cannot be change during run time.

28. Predict the value of 'b' in the following C++ code after execution of each code snippet a) and b). Justify your answer.   **[July 2015, Score 3]**

   a) a = 5 ; b = a++;

   b) a = 5 ; b = ++a ;

<div align="center">OR</div>

What is the role of comments in a program? Explain the different ways to write comments in a C++ program.

Ans. a)   a) b = 5

           a. b = 6

b) In the first statement, post increment is used. Here, first the value is used, then incremented. Whereas in the second statement, pre increment is used. Here, first the value is incremented, then used.

29. Write a C++ program to find the total and percentage of a student in six subjects.

                                          [March 2015, Score 3]

   Ans.
```
#include<iostream>
using namespace std;
int main ( )
{
        int num1, num2, num3, num4, num5, num6, sum ;
        float per ;
        cout<<"Enter marks in six subjects:" ;
        cin>>num1>>num2>>num3>>num4>>num5>>num6 ;
```

```
        sum = num1+num2+num3+num4+num5+num6;

        per = sum /100 ;

        cout<<"Sum = "<<sum;

        return 0;

    }
```

30. How do the type modifiers affect the size and range of int and char data types?

[March 2015, Score 2]

Ans. Type modifiers are the keywords used to alter the size, range or precision of data supported by the basic data types. Important modifiers are signed, unsigned, long and short. It alters the range of values by altering the memory size.

char data type has modifier as signed and unsigned

int data type has modifier as signed, unsigned, short and long.

***.

Chapter 7 - Control Statements in C++

1. Differentiate between switch and if .... else statement   **[March 2020, Score 3]**

Ans.

switch statement	if else statement
Evaluates conditions with equality operator only.	Evaluate any relational or logical expression.
Case constant must be an integer or a character type value.	Condition may include range of values and floating point constants.
When no match is found, default statement is executed.	When no expression evaluates to True, else block is executed.
break statement is required for exit from the switch statement.	Program control automatically goes out after the completion of a block.
More efficient when the same variable or expression is compared against a set of values for equality.	More flexible and versatile compared to switch.