

## SAMPLE PAPER-1 SOLUTOIN

1. Building block of a program is called a token. It is also called program element. Tokens of a C++ program can be classified as Keyword, Identifier, Constant, Operator, String and Comment.

Keywords: void, int, double

Identifiers: a, b, avg, main( ),

String: "Average=", "Input Two integer values"

2. output  
8,0,16  
32,16,512

3. **Program with correction underlined**

```
//Program finds minimum of two inputted values and
```

```
//Displays the minimum value on the screen
```

```
#include<iostream.h>
```

```
void main()
```

```
{
```

```
    double a, b, min;
```

```
    cout<<"Input 1st Value? "; cin>>a;
```

```
    cout<<"Input 2nd Value? "; cin>=b;
```

```
    if(a<b)
```

```
        min==a; /* logical Error since question is for syntax error
```

```
        only, it will not be treated as syntax error */
```

```
    else
```

```
        min=b;
```

```
    cout<<"Minimum value="<<min<<endl;
```

```
}
```

4. char, int, float, double

5. void, Float

6. A variable is a name given to a memory location to store a value and it represents a value in a program. The value assigned to the variable name may change during execution of program. The program can always access the current value of the variable by referring to its name.

### **Rules for naming a C++ variable (identifier)**

1. Variable name should start with an alphabet (letter) or an underscore.
2. Variable name may contain more than one character. Second characters onwards we may use only alphabets or digit or underscore.
3. No special characters are allowed in a variable name except underscore.
4. A variable name in C++ is case sensitive. Uppercase and lowercase letters are distinct.
5. A variable name cannot be a keyword.

7. Float required 4 Bytes to store value  
Float can give precision upto 7 digits

Double required 8 Bytes to store value  
Double can give precision up to 15 digits

8. Left to Right : +, -, /, \*, <, >, <=, >= &&, ||, ==, !=  
Right to Left : +=, -=, \*=, /= %= <=, ?:  
Prefix Increment and Decrement (++/--)  
Unary Plus and Minus (+,-)  
Logical NOT (!)

9. The main role of header file in c++ is that it is used to share information among various source files. They are included in C++ source using preprocessor directive #include. It contain various declaration to be used in source file.

a) endl           -> iostream.h   b)     getch()                   -> conio.h  
c)pow()         -> math.h     d)     islower()               -> ctype. h

11. i) **char** 1 bytes ii) **int** 2 Bytes iii) **double- 8 bytes Float – 4 Bytes**

12. Compiler directive is also called Pre-processor. C++ statement is an instruction given to CPU or to the computer. It is called Pre-Processor because instruction to the compiler given before the processing starts. Every Compiler Directive begins with hash (#). Examples of Compiler Directives are given below:

#include: to include header files  
#define:         to create C++ macros

13. **Syntax error:** error committed when the syntax of the language (grammar of the language) is violated.

Examples of Syntax errors are given below:

- a) Typographical mistakes
- b) Omitted semicolons or coma
- c) References to undeclared variables
- d) Wrong number or type of parameters passed to a function
- e) Call to undefined function

Syntax errors are detected by the compiler. Syntax errors are also known as **Compile-Time** errors because the errors are flagged by the compiler during compilation time.

**Run-time error:** Syntactically correct statement performs illegal operation during execution of a program is called Run-Time errors. Illegal operation is performed when the program encounters unexpected data. Run-Time errors are triggered when **running** the program. Examples of Run-Time errors are given below:

- a) Division by zero (0)
- b) Square root of a negative number
- c) Logarithm of zero (0) or negative number
- d) Inputting character / string value when integer or floating point value is expected

14. Displaying many values by using single cout and separating the values by output operator (<<) is known as **cascading of output operator**. An example is given below:

```
cout<<"Vinay Ahuja"<<11<<'A'<<78.5<<endl;
```

Inputting many values by using single cin and separating the variable names by input operator (>>) is known as **cascading of input operator**. An example is given below:

```
char name[20];  
int cla;  
char sec;  
double marks;  
cin>>name>>cla>>sec>>marks;
```

15. Converting data from one type to another type temporarily, inside the processor (CPU).

```
#include<iostream.h>  
void main()  
{  
    char ch;  
    cout<<"Input a character? ";  
    cin>>ch;  
    int code=int (ch);  
    cout<<"ASCII Code="<<code<<endl;  
}
```

16 **Comment:** Non executable statements of a C++ program are called Comments. Comments are also known as Remarks. A Comment is completely ignored by a compiler. No code is generated for a Comment. Comment is a good tool for Debugging. C++ supports two types of Comments:

**Single line Comment:** also known as C++ style Comments. Single Line Comment starts with pair of forward slash (//) and till the end of line is considered as a Comment. Examples of Single Line Comment are given below:

```
// single line comment
// comment in C++ style
```

**Multi-line comment:** also known as C style comments. Multi-line comment start with forward slash and star (/\*) and with star and forward slash (\*). Examples of Multi-Line Comment are given below:

```
/*
    multi-line comments
    comment in C style
*/
/* Single line comment */
```

- 17. Return value will be 1 as this Boolean expression is return true
- 18. '/' is used to find quotient of division '% is used to find the remainder of division
- 19. i) if(mychar >=0 && mycahr <=9)
  - ii) if( number %2!=0 && number %5!=0)
  - iii) if(marks<0 && marks>100)
  - iv) if(alpha=='A' || alpha=='E' || alpha=='I' || alpha=='O' || alpha=='U' )

```
20.
#include<iostream.h>
#include<conio.h>
#include<math.h>
void main()
{
float p,b,h;
cout<< "Enter Perpendicular Side : " <<endl;
cin>>p;
cout<< "Enter Base Side : " <<endl;
cin>>b;
h=sqrt(p*p + b*b);
cout<< "Hypotenuse Side : " <<h;
getch();
}
```

21. Input name of a student (string of 20 characters) and Computer Science marks out 100. [4]  
Calculate grade (Grade is to be stored in a character type variable) on the basis of the table given below:

Marks	Grade
Greater than equal to 95	A
Greater than equal to 85 and less than 95	B
Greater than equal to 70 and less than 85	C
Greater than equal to 60 and less than 70	D
Greater than equal to 50 and less than 60	E
Greater than equal to 40 and less than 50	F
Less than 40	U
Greater than 100 or less than 0 (zero)	Error

Display inputted name and marks and calculated grade. If inputted marks is less than 0 (zero) or more than 100 then display an error message "Error".

```

#include<iostream.h>
#include<conio.h>
#include<stdio.h>
void main()
{
char name[20];
char grade;
float marks;
cout<<" Enter Name:   ";
gets(name);
cout<<" Enter the Computer Science Marks:   ";
cin>>marks;
if(marks>=95)
{
grade= 'A';
}
else if(marks>=85 && marks <95)
{
grade= 'B';
}
else if(marks>=75 && marks <85)
{
grade= 'C';
}
else if(marks>=60 && marks < 70)
{
grade= 'D';
}
else if(marks>=50 && marks <60)
{
grade= 'E';
}
else if(marks>=40 && marks <50)
{
grade= 'E';
}
else
{
grade= 'U';
}
cout<<"Name : "<<name<<endl;
if(marks>=0 && marks<=100)
{
cout<<"Computer Marks ="<<marks<<endl;
cout<<" Grade "<<grade;
}
else
{
cout<<" You have done Error in Entering Marks"<<endl;
cout<<" Marks should be between 0 and 100";
}
getch();
}

```