

**Sample Paper Class – I**  
**Subject – Computer Science**

**Time: 3Hours**

**Maximum Marks: 70**

**Note. (i) All questions are compulsory.**

- 1 a) What are the different functions of operating system? 2  
b) How the information can be used as a data explain ? 2  
c) What do you mean by unary operators 2  
d) What are the different parts of CPU? Explain every part in brief. 2  
e) Define System Software and what are its two main types? Give examples.2  
f) What is Booting? 1  
g) Which of the following are hardware and software? 1  
(i) Capacitor (ii) Internet Explorer (iii) Hard disk (iv) UNIX
2. Explain the following term: (Give answer any six) 6
- i) Variable  
ii) Token  
iii) Array  
iv) Debugging  
v) Comment  
vi) Keyword
- 3 a) What is the difference b/w “while” & “do while” loop? 2  
b) What are data types? What are all predefined data types in c++? 2  
c) What will be the size of following constants? 1  
“\v”, “\v”,  
d) Write the corresponding C++ expressions for the following mathematical expressions:  
1  
i)  $\sqrt{a^2+b^2}$  (ii)  $(a+b)/(p+q)^2$   
e) Evaluate the following, where p, q are integers and r, f are floating point numbers.  
The value of p=8, q=4 and r=2.5  
(i)  $f = p * q + p/q$   
(ii)  $r = p+q + p \% q$  2
- 4 a) What is the output of the following? 2
- i) # include<iostream.h>  
void main ( )  
{  
int i=0;  
  
cout<<i++<<” ”<<i++<<” ”<<i++<<endl;  
cout<<+++i<<” ”<<+++i<<” ”<<+++i<<endl  
}
- ii) # include<iostream.h>  
void main( )  
{  
a=3;  
a=a+1;  
if (a>5)  
cout<<a;  
else  
cout<<(a+5);

iii) What will be the output of the following program segment? 2  
 If input is as: (a) g (b) b (c) e (d) p 3

```

}
cin >>ch;
switch (ch)
{ case 'g': cout<<"Good";
  case 'b': cout<<"Bad";
    break;
  case 'e': cout<<" excellent ";
    break;
  default: cout<<" wrong choice";
}

```

iv) Determine the output: 2

```

for(i=20;i<=100;i+=10)
{
  j=i/2;
  cout<<j<<" ";
}

```

v) What output will be the following code fragment produce?

```

void main( )
{
  int val, res, n=1000;
  cin>>val;
  res = n+val >1750 ? 400:200;
  cout<<res;
}

```

(i) if val=2000 (ii) if val=1000(iii) if val=500 3

5 a) Find the error from the following code segment and rewrite the corrected code underlining the correction made. 2

```

#include(iostream.h)
void main ( )
int X,Y;
cin>>>X;
for(Y=0,Y<10, Y++)
  if X= =Y
    cout<<Y+X;
  else
    cout>>Y; }

```

b) Convert the following code segment into switch case construct. 3

```

int ch;
cin>>ch;
If(ch = = 1)
{ cout<<" Laptop";
}
else If(ch = = 2)
{
  cout<<"Desktop ";
} else if(ch= = 3)

```

```

    {
        cout<<"Notebook";
    } else
        {
            cout<<"Invalid Choice";
        }
    }
}

```

c) Convert the following code segment into do-while loop.

3

```

#include<iostream.h>
void main()
{ int i;
  for(i=1;i<=20;++i)
    cout<<"\n"<<i;
}

```

d) Given the following code fragment

```

int ch=5;
cout << ++ch<< "\n"<<ch<<"\n";

```

- i) What output does the above code fragment produce?
- ii) What is the effect of replacing ++ ch with ch+1?

2

6 a) Which header files are required for the following?

(i) frexp() (ii) sqrt( ) (iii) rand( ) (iv) isupper()

2

b) Evaluate:

4

- i)  $(12)_{10} = (X)_2$
- ii)  $(347)_8 = (X)_{10}$
- iii)  $(896)_{16} = (X)_8$
- iv)  $(100)_{10} = (X)_2$

7 a) Write a C++ program to check a year for leap year or not.

2

b) Write a C++ program to check a number for Armstrong or not.

4

c) Write a C++ program to calculate the factorial of any given number

4

d) Write a C++ program to print the Fibonacci series

4

e) Write a C++ program to print table a given number.

2

## Answer key

### Q.No.1

- a. Major OS functions are listed below
  1. Process Management
  2. Storage Management
  3. Information Management (Student has to describe all in brief)
- b. The processed information can be used as a data again to produce a next level information. For example- total no. of students school wise can give the information that how students are there in one region again this information as a data can be used to calculate that how many students are studying in KVS
- c. unary operators are the operators, having one operand and two operators. There are two types of unary operators-
  - i. unary increment ( Ex.  $a++$ (post increment)/ $++a$ (pre increment))
  - ii. Unary decrement ( $a--$ (post decrement)/ $--a$ (pre decrement))
- d. ALU(Arithmetic logic unit), CU(control unit), MU(memory unit)
- e. System software are the software that govern the operation of computer system and make the hardware run. These software can be classified into two categories.  
Operating System & Language Processor
- f. Booting is a process through which operating system makes the computer system ready to perform user's task
- g. Hardware- I&III, Software- II&IV

### Q.No.2

- i. variable is a name given to the memory location, whose value can be changed during run time.
- ii. The smallest individual unit in a program is known as a token
- iii. Array is a combination of similar data values. It is used to store more than one value under same name
- iv. debugging is a way to correct the errors in the program during compilation
- v. comments are non executable statements, used to give the information about the code for future use.
- vi. Keywords are the reserved words, programmed by the programmer to perform the specific task. The keyword can not be taken as a name of variable.

### Q.No.3

- a. While loop is entry control loop i.e. while loop first will test the condition and if condition is true then only the body of the loop will be executed. While do-while loop is exit control loop and even the condition is not true at least one time the body of the loop will be executed.
- b. data types are means to identify the types of data and associated operation of handling it. The fundamental data types are- char, int, float, double and void.
- c. one byte
- d. i.  $\sqrt{a^2+b^2}$  & ii.  $((a+b)/((p+q)*(p+q)))$
- e. students do yourself

### Q.No.4

- a.
  - i. 0 1 2  
4 5 6
  - ii. 9
  - iii. For g- good & bad / for b – bad / for e – excellent / for – p wrong choice
  - iv. 10,15,20,25,30,35,40,45,50
  - v. 400, 400, 200

### Q.No.5

- a. Errors – if  $x==y$  (correct- if( $x==y$ )) & cout<>y(correct cout<<y)

b.

```
int ch; cin>>ch;
switch(ch)
{
    Case 1 : cout<<" Laptop"; break;
    Case 2: cout<<"Desktop "; break;
    Case 3: cout<<"Notebook";break;
    Default : cout<<"Invalid Choice";
```

```

    }
c. #include<iostream.h>
    void main()
        { int i;
          i=1
          do
            { cout<<"\n"<<i;
              ++i
            }while (i<=20);
        }

```

d. In both condition output will be 6 5

#### Q.No.6

- a. math.h , math.h , stdlib.h , ctype.h
- b. 1100, (232) , (4226), (1100100)

#### Q.No.7

```

a.
#include<iostream.h>
#include<conio.h>

void main()
{
  clrscr();
  int year;
  cout<<"Enter Year(ex:1900):";
  cin>>year;
  if(year%100==0)
  {
    if(year%400==0)
      cout<<"\nLeap Year";
  }
  else
    if(year%4==0)
      cout<<"\nLeap Year";
    else
      cout<<"\nNot a Leap Year";
  getch();
}

```

```

b.
#include<iostream.h>
#include<conio.h>
void main()
{
  int Number,Temp,b=0;
  cout<<endl<<"Enter any number to check";
  cin>>Number;
  Temp=Number;
  int P;
  while(Temp>0)
  {
    P=Temp%10;
    b=b P*P*P;
    Temp=Temp/10;
  }
}

```

```

if(b==Number)
{
    Cout<<endl<<"Armstrong no";
}
else
{
    cout<<"Not an armstrong no";
}
getch();
}

```

**c.**

```

#include <iostream.h>
int factorial(int);

void main(void) {
int number;

cout << "Please enter a positive integer: ";
cin >> number;
if (number < 1)
cout << "That is not a positive integer.\n";
else
cout << number << " factorial is: " << factorial(number) << endl;
}

```

```

int factorial(int number) {

if(number <= 1) return 1;
else
return number * factorial(number - 1);
}

```

**d.**

```

#include<iostream.h>
#include<conio.h>
int main()
{
    clrscr();
    unsigned long first,second,third,n;
    int i;
    first=0;
    second=1;
    cout<<"how many elements(>5)? \n";
    cin>>n;
    cout<<"fibonacci series\n";
    cout<<first<<" "<<second;
    for(i=2;i<n;i++)
    {
        third=first+second;
        cout<<" "<<third;
        first=second;
        Second=third;
    }
    return 0;
    getch();}

```

e.

```
#include<iostream.h>
#include<stdio.h>
void main()
{
int r,m,i,n;
cout<<"Enter the number to generate its table";
cin>>n;
cout<<"Enter the number(table upto)";
cin>>m;
i=1;
while(i<=m)
{
r=n*i;
cout<<N<<"*"<<|<<"="<<R<<endl;
}
}
```