

V & C PATEL ENGLISH SCHOOL ~ V.V.NAGAR

Half Yearly Exam-2017-18

Class- XII

Subject- Computer Science

Time Allowed :- 3:00 hrs.

MM :- 70

Note :- 1. All Questions are compulsory to attempt.

Q-1

- 1) Observe the following C++ code and write the name(s) of the header file(s), which will be essentially required to run it in a C++ compiler: 1

```
void main()
{
char CH, STR[20];
cin>>STR;
CH=toupper(STR[0]);
cout<<STR<<"starts with"<<CH<<endl;
}
```

- 2) Rewrite the following C++ code after removing all the syntax error(s), if present in the code. Make sure that you underline each correction done by you in the code. 2

Important Note:

- Assume that all the required header files are already included, which are essential to run this code.
- The corrections made by you do not change the logic of the program.

```
typedef char[80] STR;
```

```
void main()
{
Txt STR;
gets(Txt);
cout<<Txt[0]<<"\t"<<Txt[2];
cout<<Txt<<endl;
}
```

- 3) Which C++ header file(s) are essentially required to be included to run/execute the following C++ source code(Note: Do not include any header file, which is/are not required): 1

```
void main()
{
char TEXT[]="Something";
cout<<"Remaining SMS Chars :"<<160-strlen(TEXT)<<endl;
}
```

- 4) Rewrite the following program after removing the syntactical error(s) (if any). Underline each correction. 2

```
#include <iostream.h>
Class Item
{
long IId,Qty;
public:
void Purchase{cin>>IId>>Qty;}
void Sale()
{
cout<<setw(5)<<IId<<" Old:"<<Qty<<endl;
```

```

cout<<"New:"<<--Qty<<endl;
}
};
void main()
{
Item I;
Purchase();
I.Sale();
I.Sale()
}

```

- 5) Read the following C++ code carefully and find out, which out of the given options (i) to (iv) are the expected correct output(s) of it. 2

```

void main()
{
    Randomize();
    int Marks[]={99,92,94,96,93,95}, MyMarks;
    MyMarks = Marks[1+ random (2)];
    cout<<MyMarks<<endl;
}

```

- (i) 99 (ii) 94 (iii) 96 (iv) None of the above

Q-2

- 1) What is the difference between the members in private visibility mode and the members in protected visibility mode inside a class? Also, give a suitable C++ code to illustrate both. 2
- 2) What do you mean by Friend Function? 1
- 3) How are encapsulation and abstraction inter-related? 1
- 4) What will happen in the absence of the constructor in the inherited class? 1
- 5) Can private members of a class be accessed by the derived class? If yes, how? 1
- 6) What do you understand by default constructor and copy constructor? 2
- 7) Find the output of the following program 2

```

#include<stdio.h>
#include<stdlib.h>
#include<iostream.h>
#include<conio.h>
void main()
{
    randomize();
    int num=5,rndnum;
    clrscr();
    rndnum=random(num)+7;
    for(int n=1;n<=rndnum;n++)
    cout<<n<<" ";
    getch();
}

```

Q-3

- 1) What is the difference between a Run Time Error and Syntax Error? Also, give a suitable C++ code to illustrate both. 2

2) Answer the questions (i) and (ii) after going through the following class:

2

```
class Test
{
    char Paper[20];
    int Marks;
    Public:
    Test () // Function 1
    {
        Strcpy(Paper, "Computer");
        Marks = 0;
    }
    Test (char P[ ]) // Function 2
    {
        Strcpy(Paper,P);
        Marks = 0;
    }
    Test (int M) // Function 3
    {
        Strcpy(Paper, "Computer");
        Marks = M;
    }
    Test (char P[ ], int M) // Function 4
    {
        Strcpy(Paper, P);
        Marks = M;
    }
};
```

(i) Which feature of Object Oriented Programming is demonstrated using Function 1, Function 2, Function 3, Function 4 in the above class Test?

(ii) Write statements in C++ that would execute Function 2 and Function 4 of class test.

3) Find the output of the following program:

3

```
#include<iostream.h>
class METRO
{
    int Mno,TripNo,PassengerCount;
    public:
    METRO(int Tmno=1)
    {
        Mno=Tmno;TripNo=0;PassengerCount=0;
    }
    void Trip(int PC=20)
    {
        TripNo++;PassengerCount+=PC;
    }
    void StatusShow()
    {
        cout<<Mno<<":."<<TripNo<<":."<<PassengerCount<<endl;
    }
};
void main()
{
```

```

METRO M(5),T;
M.Trip();
T.Trip(50);
M.StatusShow();
M.Trip(30);
T.StatusShow();
M.StatusShow();
}

```

- 4) What do you understand by the polymorphism? Give an example in C++ to show its implementation in C++. 2
- 5) What is Inheritance? Give an example in C++ to show its implementation in C++. 2
- 6) What is the fundamental idea of Object-Oriented Programming? 1
- 7) What is the difference between call by value and call by reference in a user defined function in C++? Give an example to illustrate same. 2
- 8) Write the names of header files to which the following belongs: 2
- a) gets() b) strcmp() c) abs() d) setw()
- 9) What do you understand by member function? How does a member function differ from an ordinary function? 2
- 10) Differentiate between constructor and destructor function. 2
- 11) What do you mean by temporary instance of a class? What is its use? How is it created? 2
- 12) Give output of following code fragment: 2

```

int val, res, n = 1000;
cin >> val;
res = n + val > 1750 ? 400: 200;
cout << res;

```

(a) if the input is 2000. (b) if the input is 1000. (c) if the input is 500.

- 13) Answer the question (i) and (ii) after going through the following class : 2

```

class Travel
{
int PlaceCode; char Place[20]; float Charges;
public:
Travel( ) //Function 1
{
PlaceCode=1;strcpy(Place,"DELHI");Charges=1000;
}
void TravelPlan(float C ) // Function 2
{
cout<<PlaceCode<<":"<<Place<<":"<<Charges<<endl;

```

```

}
~Travel( ) // Function 3
{
cout<<"Travel Plan Cancelled"<<endl;
}
Travel(int PC,char p[],float C) // Function 4
{
PlaceCode=PC;strcpy(Place,P);Charges=c;
}
};

```

i) In Object Oriented Programming, what are Function 1 and Function 4 combined together referred as?

ii) In Object Oriented Programming, which concept is illustrated by Function 3? When is this function called/invoked?

14) Answer the questions i), ii) and iii) after going through the following class: 3

```

Class class A
{
    Protected:
        Int y;
    Private:
        Void processval ();
    Public:
        Void getval (int);
        Void putval ();
};
Class class B: protected class A
{
    Int x;
    Protected:
        Int z;

    Public:
        Void getdata (int,int);
        Void showdata();
};
Class class C: public class B
{
    Int data;
    Public:
        Void showvalue (void);
};

```

- i) Name the member functions which are accessible by objects of class C.
- ii) Name base class for class B.
- iii) Name the data members which are accessible from the objects of class B.

15) Answer the questions (i) to (iv) based on the following:

4

```
class COMPANY
{
    char Location[20];
    double Budget,Income;
protected:
    void Accounts( );
public:
    COMPANY();
    void Register( );
    void Show( );
};
class FACTORY: public COMPANY
{
    char Location[20];
    int Workers;

protected:
    double Salary;
    void Computer();
public:
    FACTORY();
    void Enter( );
    void show( );
};
class SHOP: private COMPANY
{
    char Location[20];
    float Area;
    double Sale;
public:
    SHOP();
```

```

void Input();
void Output();
};

```

- (i) Name the type of inheritance illustrated in the above C++ code.
- (ii) Write the names of data members, which are accessible from member functions of class SHOP.
- (iii) Write the names of all the member functions, which are accessible from objects belonging to Class FACTORY.
- (iv) Write the names of all the members, which are accessible from objects of class SHOP.

- 16) Differentiate between the post-increment and pre-increment operators. Also give a suitable C++ Code to illustrate both. 3
- 17) Illustrate the concept of function overloading with the help of an example. 2
- 18) How are classes and objects implemented in C++? 2

Q-4

- 1) Write definition for a function SUMSeries() in C++ with two arguments/parameters – double x and int n. the function should return a value of type double and it should perform sum of the following series : 4

$$x - x^2/3! - x^3/5! + x^4/7! - x^5/9 + \dots \text{Up to } n \text{ terms.}$$

(Note : The symbol ! represents Factorial of a number i.e. $5! = 5*4*3*2*1$)

- 2) Define a class Tourist in C++ with the following specification: 4

Data Members

- CNO - to store Cab No
- CType - to store a character 'A', 'B' or 'C' as City Type
- PerKM - to store per Kilo Meter charges
- Distance - to store Distance travelled (in Km)

Member Functions

- A constructor function to initialize CType as 'A' and CNo as '0000'
- A function CityCharges() to assign PerKM as per the following table:

CType	Per KM
A	20
B	18
C	15

- A function RegisterCab() to allow administrator to enter the values for CNo and CType. Also, this function should call CityCharges() to assign PerKM Charges.
- A function Display() to allow user to enter the value of Distance and display CNo, CType, PerKM, PerKM*Distance (as Amount) on screen.

3) Consider the following C++ code and answer the questions from (i) to (iv):

4

```
class University
{
    long Id;
    char City[20];
protected:
    char Country[20];
public:
    University();
    void Register();
    void Display();
};
class Department: private University
{
    long DCode[10];
    char HOD[20];
protected:
    double Budget;
public:
    Department();
    void Enter();
    void Show();
};
class Student: public Department
{
    long RollNo;
    char Name[20];
public:
    Student();
    void Enroll();
    void View();
};
```

- (i) Which type of inheritance is shown in the above example?
- (ii) Write the names of those member functions, which are directly accessed from the objects of class Student.
- (iii) Write the names of those data members, which can be directly accessible from the member functions of class Student.
- (iv) Is it possible to directly call function Display() of class University from an object of class Department?
(Answer as Yes or No)