Roll No. | 1 | 6 | 0 | 5 | 8 | 5 | 7 | 0 | 0 | 2 | 6 |

S. No. of Question Paper : 1773

Unique Paper Code : 32341101   GC-3

Name of the Paper : C1-Programming Fundamentals using C++

Name of the Course : B.Sc. (II) Computer Science (CBCS)

Semester : I

Duration : 3 Hours   Maximum Marks : 75

(Write your Roll No. on the top immediately on receipt of this question paper.)

The question paper consits of *two* Sections,

Section A is compulsory.

Attempt any *four* questions from Section B.

Section A

(Compulsory)

1.   (a)   What are the different ways to code constants in a C++ program ? Give examples.   3

     (b)   Given the following declarations :   2

       int m = 1, n = 2, i = 1, j = 5;

       Evaluate the values of the expression, and state the values of each of the variables after the expression is evaluated.

       i--&&(4 * ++m <=n)

(c)   Give the output of the following code fragments :

(i)   int n = 5;   2

        if (n ==0)

        cout <<"n is zero"<<"\n";

        else

        cout <<"n is not zero" <<".\n";

        cout <<"The square of n is" <<n * n <<"\n";

(ii)   int n, k = 5;   2

        n = (100% k ? k + 1 : k − 1);

        cout <<"n ="<<n<<" k = " << k<< endl;

(iii) int list[] ={2, 4, −5, 6, 7, 0, −1, 6};   3

        bool pos = true;

        int i = 0;

        while (pos && list[i]!=0)

         pos = (list[i++]>0);

        cout<<"The final output is:"<<pos<<"for i ="<<i;

(*iv*) int i1 = -254;

2

float f1=53.6456;

int i2=8;

cout <<<<"i1"<<setw(7)<<i1<<"i2"<<setw(4)<<i2;

cout.setf(ios::fixed, ios::floatfield);

cout <<setprecision(2);

cout <<"f1"<<f1;

cout.setf(ios::oct,ios::basefield);

cout <<"octal of i2"<<i2;

(*v*) string x="FROM:abcd@rmail.com";

2

int colonPos=x.find(':');

string prefix=x.substr(0,colonPos);

string suffix = x. substr(colonPos+1);

cout<<"-This message is from"<<suffix<<endl;

(vi) string str1 ("Brick house");

string str2 ("Mud house");

string str3("concrete");

if(strl.compare(6, 5, str2) = =0)

   cout<<str1<<"is same as"<< str2<<"\n";

else

   cout<<str1<<"is not same as"<< str2<<"\n";

string newstr=str1.substr(0,5);

newstr.append(str2);

cout<<"New string."<<newstr<<"\n";

newstr.replace(5,3,str3);

cout<<"Now New string."<<newstr<<"\n";

(vii) # include<iostream.h>

class base

{

   int no1;

public:

   int no2;

 base()

{cout<<Base Constructor\n";}

   voit getdata();

   int getno1();

   void showno1();

};

```cpp
Class derived : public Base
{
int no3;
public:
derived()
{cout<<"Derived Constructor\n";}
    void add();
    void display();
};
  void base :: getdata(0)
{
no1 = 10;
no2 = 20;
}
int base :: getno1()
{
return no1;
}
void base :: showno1()
{
cout<<"Number 1 ="<<no1<<"\n";
}
void derived :: add()
{
no3 = no2 + getno1();
}
```

```
void derived :: display()

{

cout<<"Number 1 ="<<getno1( )<<"\n";

cout<<"Number2 ="<<no2<<"\n";

cout<<"Sum"<<no3<<"\n";

}

main( )

{

derived d;

d.getdata( );

d.add( );

d.showno1( );

d.display( );

d.b = 100;

d.add( );

d.display ( );

return 0;

}
```

(d) Point out the errors in the following code fragment :   2+2

(i) intf(int *aa, int &bb)

```
{
        &bb = 8;

        aa[1] = bb[2];

        aa[0] = bb;

}
```

(ii) class try

```
{int k;

public:

        void try(int 1)

        {k=1;}

        friend void func(try &t);

};

void func(try &t)

{cout<<t.k;}

int main()

{try t1(2); tryt2(3);

  t1.func(t2);

return 0;

}
```

(e) Write a function that replaces all vowels in a character array with asterisk (*).　4

(f) What is exception specification ?　2

(g) Name the *four* standard streams in C++.　2

Section B

2. (a) Rewrite the following for statement as an equivalent while statement :　3

for(i=0;i<max_length; i++)

if(input_line[i]=='?')

quest_count++;

(b) Write C++ declarations for the following :　1+2

(i) A pointer to an array of 10 integers.

(ii) A function accepting an array of integers and a character parameter and returning a pointer to an integer.

(c) Write a C++ function that takes in one integer parameter and returns 0 if the number is a palindrome and 1 otherwise. The parameter must be passed by reference.　4

3. (a) What are inline functions ? How are they declared ?　3

(b) What are static members of a class ? How are they accessed ? Explain with example.　3

(c) Write a function that swaps two integers using pointers.　4

4. (a) Write a function that prints the following pattern for a given integer n. The following pattern is printed for n=3. 4

　　　　　1

　　　　22

　　　　333.

(b) Consider the following class :

Class Circle

{

　　　float radius;

};

Add the following member functions to this class with their definitions :

(i) A default constructor;

(ii) A parameterized constructor;

(iii) A function that computes the area.

Show how will these functions be called from main function. 6

5. (a) Create a class Time with three data members : hours, minutes and seconds. Write member functions to overload unary increment (++) operator that increments the corresponding hours, minutes and seconds of the class time. Write code for both prefix and postfix versions of the same. 6

(b) Write a program that reads a text file and prints the number of characters in it. 4

6. (a) Explain the difference between function overloading and function overriding with suitable examples. 4

(b) Consider a following class : 3

class base

{int p1;

protected:

int p2;

public:

int p3;

}

What will be the access type of p1, p2 and p3 in class deri if :

(i) class deri : private base

{

};

(ii)   class deri : protected base

      {

      };

(iii)   class deri : public base

      {

      };

(c)   Write a program that accepts a string through command line arguments and prints its length.

                  3

7.   (a)   Create a base class shape with two data members length and breadth and virtual function area. Derive a class rectangle with public inheritance. Override the function area. How can you call the two area functions by using a single pointer to the base class ? Show.

                  2+2+2

(b)   (i)   What is a generic catch statement in exception handling ?   2+2

(ii)   Can an exception be handled only in the current function ? Explain your answer.