

Roll No.

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. (H) 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 consists 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)

P.T.O.

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

(i) int n = 5;

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;

n = (100% k ? k + 1 : k - 1);

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

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

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@mail.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;

P.T.O.

(vi) string str1 ("Brick house");  
 string str2 ("Mud house");  
 string str3("concrete");  
 if(str1.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";}
    void getdata();
    int getno1();
    void showno1();
};
```

Class derived : public Base

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

P.T.O.

```
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;

}

P.T.O.

- (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.

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

P.T.O.

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.