

SL No of QP :13360

Unique Paper Code : 2344001101

Name of the Paper : **Programming Using C++**

Name of the Course : **Generic Elective**

Semester : **I**

Duration : **3 Hour**

Maximum Marks: 90

Instructions for Candidates:

1. Write your Roll No. on the top of the question paper.
2. **Section-A** is compulsory.
3. Attempt any *four* Questions from **Section B**.
3. Parts of question must be answered together.

Section A

1. (a) Explain signed and unsigned modifiers with examples. (3)
- (b) Explain Constructor and Destructor with the help of example. (3)
- (b) Differentiate between implicit and explicit conversion in c++ with the help of an example. (4)
- (c) Write logical expressions to represent each of the following conditions: (4)
 - (i) Check if a number p is positive and even.
 - (ii) Check if x is divisible by 2 or 3.
- (d) Write the short notes on the following: (4)
 - (i) Abstract Class
 - (ii) Function Overloading
- (c) Find out the error(s) in the following C++ code and write the correct code: (6)
 - (i)

```
#include <iostream>
using namespace std;
int main()
{
    int a, b;
    cout << "Enter two numbers";
    cin << a >> b;
    cout << "Sum = " << a + b;
    return 0;
}
```
 - (ii)

```
#include <iostream>
using namespace std;

add(int a, int b) {
    return a + b;
}

int main() {
    cout << add(3, 4);
}
```

```

        return 0;
    }

(iii) #include <iostream>
using namespace std;

int main() {
    char grade = "A";
    cout << grade;
    return 0;
}

```

(e) Give the output of the following code fragment after execution:

(6)

```

(i) #include <iostream>
using namespace std;

void rotate(int &a, int &b, int &c)
{
    int temp = a;
    a = b;
    b = c;
    c = temp;
}

int main()
{
    int a = 5, b = 10, c = 15;
    rotate(a, b, c);
    cout << a << " " << b << " " << c;
    return 0;
}

(ii) #include <iostream>
using namespace std;

void show(char ch = 'X', int n = 3)
{
    while (n--)
        cout << ch;
}

int main()
{
    show();
    show('A');
    return 0;
}

```

Section B

2. (a) Write a C++ program to swap two numbers using pointers.

(5)

(b) Write a C++ program to check whether a given number is palindrome or not. (5)

(c) Write a C++ program that prints the pattern given below: (5)

```
1
2 2
3 3 3
4 4 4 4
5 5 5 5 5
```

3. (a) Write a program that reads a text file `Source.txt` and copies its contents into another file `Destination.txt`. (5)

(b) Write a function template `summation()` to calculate the sum of two numbers. Call `summation()` with int and double inputs in `main()`. (5)

(c) What is run-time polymorphism? Explain with an example. (5)

4. (a) Write a function `myfunc()` to print numbers from 1 up to 10 using for loop. (5)

(b) Write the output of the followings expressions/codes given below:

(i) `#include <iostream>` (2)
`using namespace std;`
`int main()`
`{`
 `int a = 8, b = 15;`
 `int larger = (a > b) ? a : b;`
 `int sum = a + b;`
 `cout << larger << " " << sum << endl;`
 `return 0;`
`}`

(ii) `#include <iostream>` (2)
`using namespace std;`
`int main()`
`{`
 `int a = 10;`
 `cout << (a << 2);`
 `return 0;`
`}`

(iii) `#include <iostream>` (3)
`using namespace std;`

`int main()`
`{`
 `int n = 7;`
 `if (n % 2 == 0)`

```

        cout << "n is even" << endl;
    else
        cout << "n is odd" << endl;
    if (n % 3 == 0)
        cout << "Divisible by 3" << endl;
    else
        cout << "Not divisible by 3" << endl;
    cout << "Value of n: " << n << endl;
    return 0;
}

```

(iv) `#include <iostream>` (3)
`using namespace std;`

```

int main()
{
    int x = 1;
    cout << x++ << endl;
    cout << ++x << endl;
    cout << x++ << endl;
    return 0;
}

```

5. (a) Explain static data member and static member function with the help of suitable example. (5)
- (b) Create a class named `BankAccount` in C++ with two private data members: `accountNumber` of type integer and `balance` of type float. Define member functions `setAccount()` to update the `accountnumber` and `balance`, and `displayAccount()` to display the account details. In the `main()` function, create at least two objects of the `BankAccount` class, set their account numbers and balances using `setAccount()`, and then display the `accountnumber` and `balance` of both accounts using `displayAccount()`. (10)
6. (a) " What is inheritance in C++. Explain the different types of inheritance. (5)
- (b) Create a class `Circle` with a private data member `radius`. Write a default constructor to set `radius = 1`. Write a parameterized constructor to set `radius` to a user-defined value. Write a member function `area()` to calculate and return the area. In `main()`, create two objects of the class: one using the default constructor and one using the parameterized constructor, and display their areas. (10)
7. (a) " What is exception handling? Write a program that can catch exceptions of integer, float and string datatype, along with a default exception handler. (8)
- (b) Write the output of the following program: (7)

```
#include <iostream>
using namespace std;

int main()
{
    int num[] = {56, 75, 22, 18, 90};
    int *ptr;
    int i;
    ptr = num;
    cout << "\nValue of ptr: " << *ptr << "\n";
    ptr++;
    cout << "Value of ptr++: " << *ptr << "\n";
    ptr += 3;
    cout << "Value of ptr+=3: " << *ptr << "\n";
    ptr -= 2;
    cout << "Value of ptr-=2: " << *ptr << "\n";
    ptr = ptr - 1;
    cout << "Value of ptr-1: " << *ptr << "\n";
    return 0;
}
```