SUBJECT : COMPUTER SCIENCE (SET-II)

Time : 3 Hrs. **M.M.: 70**

General Instructions :

i) All questions are compulsory.

ii) Programming Language : C++

Q1. (a) (i) How is compiler different from interpreter? (2)

(ii) Name two output devices. (1)

(b) What is the significance of Recycle Bin? (1)

(c) (i) Write any two strengths of computer. (2)

(ii) Write the difference between multiprogramming and multitasking. (2)

Q2. (a) (i) How are integer constants represented in C++? Explain with examples. (2)

(ii) What are keywords? Can keywords be used as identifiers? (2)

(b) Write a program that reads temperature in Celsius and displays it in Fahrenheit. (2)

(c) (i) What do you mean by fundamental data types? How many fundamental data types does C++ provide? (2)

(ii) What is a reference variable? (1)

Q3. (a) (i) Write the similarities and differences between a class and a structure. (2)

(ii) What are the advantages of floating point numbers over integers? (2)

(b) (i) Write declarations for the following : (2)

(1) a reference to a floating point variable.

(2) a constant character.

(ii) Find errors, if any, in the following C++ statements : (1)

(1) const int value;

(2) value = 10; //value is already defined

(c) What will be the output of following code fragment when the value of a is (i) 6 (ii) 0 (2)

```
int a, b = 3;
cin>>a;
if (a)
        b = a++ -1;
        cout <<"a= "<<a<< endl;
        cout <<"b = "<<b<< endl;
```

Q4. (a) Construct logical expressions to represent the following conditions :. (1)

(i) donation is in the range of 4000-5000 or guest is 1.

(ii) ch is an uppercase letter.

(b) What is type conversion? What is meant by explicit type conversion? (2)

(c) (i) Write equivalent C++ expressions for the following mathematical expressions : (2)

(1) $\left(\frac{3x+5y}{5x+3y}-\frac{8xy}{2yx}\right)^{3/2}$

(2) $e^{|2x-4x|}$

(ii) What is the result of the following expression : (! check) when (2)

(1) check = 0

(2) check = -3

(d) (i) Write a statement that uses an arithmetic assignment operator to subtract the value of variable ans by 17. Write the same statement without arithmetic assignment operator. (2)

(ii) Evaluate the following C++ expression where a, b, c are integers and d, f are floating point numbers. The value of a = 5, b = 3 and d = 15. (2)

(1) t = a + b/a

(2) c = d * a + b

(3) c = (a++) * d + a

(4) f = (++b) * b – a

(e) Write C++ program to input a number n. If the number n is even and negative print its square root otherwise print n^5. (3)

Q5. (a) What is meant by entry controlled loop? Which C++ loops are entry controlled? (2)

(b) Write a do-while loop that displays numbers 2, 4, 6, 8 ..... 18, 20. (1)

(c) (i) Rewrite the following code fragment using switch : (2)

```
if (ch == 'E')
        eastern ++;
if (ch == 'W')
        western ++;
if (ch == 'N')
        northern ++;
if (ch == 'S')
        southern ++;
else
        unknown ++;
```

(ii) Write one advantage of a switch statement. (1)

(d) Write a C++ program to input 5 numbers and to find total and average. (3)

Q6. (a) Identify the errors in the following code segment and rewrite the correct code underlining the corrections made. (2)

```
Cin >>i>>j;
while (i < j)
      cout <<1 * j;
i++;
```

(b) Given the following for loop, write an equivalent while loop. (2)

```
const int Sz = 25;
for (int i = 0, sum = 0; i < Sz; i++)
        sum + = i;
cout << sum;
```

(c) Name two jump statements provided by C++. (1)

(d) How many time the following loop is executed? (2)

```
int s = 0, i = 0;
do
        s + = i;
while (i < 5);
```

(e) Write a C++ program to find the sum of the following series : (3)

$S = 1 + x + x^2 + ... + x^n$.

Q7. (a) What output shall be produced by following code fragment? (2)

```
for (outer = 0; outer < 3; ++outer)
        for (inner = 0; inner < = 4; ++ inner)
                cout <<outer<< '\t' <<inner<<endl;
```

(b) Write a C++ program to print n terms of Fibonacci series i.e. (0 1 1 2 3 5 ... n). (3)

(c) Convert $2C9_{16}$ to decimal. (2)

(d) (i) Find the eight-bit two's complement form of -14_{10}. (1)

(ii) Convert the binary number 10010 to decimal. (1)

(e) Why is binary language often termed as machine language? (2)