

SUBJECT : COMPUTER SCIENCE (SET-I)**Time : 3 Hrs.****M.M.: 70****General Instructions :****i) All questions are compulsory.****ii) Programming Language : C++**

- Q1. (a) (i) What is the function of memory? What are its measuring units? (2)
- (ii) State the difference between hardware and firmware. (1)
- (b) What is meant by the term folders? (1)
- (c) (i) Write any two weaknesses of computer. (2)
- (ii) Explain the concept of time sharing. (2)
- Q2. (a) (i) How are floating constants represented in C++? Explain with examples. (2)
- (ii) Is C++ case sensitive? What is meant by the term 'case sensitive'? (2)
- (b) Write a program that accepts radius of a circle and prints its area. (2)
- (c) (i) What is a variable? How many values are associated with it? (1)
- (ii) What are derived data types? Name the user defined data types in C++. (2)
- Q3. (a) (i) Write the similarities and differences between an array 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 constant integer.
- (2) a structure that holds information like roll no, name and grade.

- (ii) Find errors, if any, in the following C++ statements : (1)
- (1) `int code = three; //three is an enumerator`
 - (2) `enum (green, yellow, red);`
- (c) What will be the output of following code fragment when the input is (i) 'a' (ii) 'c' (iii) 'd' (iv) 'h'? (2)

```
cin >> ch;
switch (ch){
case 'a' : cout << "It is a.\n";
case 'b' : cout << "it is b.\n";
case 'c' : cout << "It is c.\n";
           break
case 'd' : cout << "It is d.\n";
           break;
default : cout << "Not a b c d.\n";
}
```

- Q4. (a) Construct logical expressions to represent the following conditions : (1)
- (i) weight is greater than or equal to 115 but less than 125.
 - (ii) x is even.
- (b) What is type conversion? What is meant by implicit type conversion? (2)
- (c) (i) Write equivalent C++ expressions for the following mathematical expressions : (2)
- (1) $ut + \frac{1}{2} ft^2$
 - (2) $|a| + b \geq |b| + a$
- (ii) What is the result of the following expression : $a \geq b \ \&\& \ (a + b) > a$ when (2)
- (1) $a = 3, b = 0$
 - (2) $a = 7, b = 7$
- (d) (i) Write a statement that uses an arithmetic assignment operator to subtract the value of

(2)

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.

(1) $f = a + b/a$ (2)

(2) $c = d * a + b$

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

(4) $f = (++b) * b - a$

- (e) Write C++ program to find whether the given character is a digit or a letter. (3)

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

- (b) Write a while loop that displays numbers 1, 3, 5, 7, 15, 17. (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 limitation of switch statement. (1)

- (d) Write a C++ program to input marks in 5 subjects and display their total average. (3)

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

```
{
```

```
    Int a, b;
```

(3)

```

goto end;
char ch;
cin >> ch;
if ch != '\n'
    cout << "Not a newline";
end :
}

```

- (b) Given the following code fragment, write an equivalent do-while loop. (2)

```

i = 100;
while (i)
    cout << i--;
cout << "\n Thank you";

```

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

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

```

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

```

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

$$1^2 + 3^2 + 5^2 + \dots + n^2$$

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

```

for (outer = 0; outer < 2; ++outer)
    for (inner = 0; inner <= 3; ++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 B2F₁₆ to octal. (2)

- (d) (i) Find the eight-bit two's complement form of -52₁₀. (1)

- (ii) Convert the binary number 101010 to decimal. (1)

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