

Roll No. _____

Code : 112012-083

Please check that this question paper contains 7 questions and 8 printed pages.

CLASS-XI
COMPUTER SCIENCE (083)

Time Allowed : 3 Hrs.

Maximum Marks : 70

General Instructions :

- All the questions are compulsory.
- The paper contain 7 Questions.
- Programming language used: C++
- 15 minutes time has been allotted to read this question paper. During this time, the student will only read the question paper, he/she will not write on the answer book.

-
- Q1. (a) What is the difference between compiler and interpreter? (2)
- (b) What is a computer virus? Give name of an antivirus software. (1)
- (c) Convert the following : (1×4=4)
- (i) $(10111011)_2 = (?)_{10}$
- (ii) $(452.3)_8 = (?)_2$
- (iii) $(3A7)_{16} = (?)_8$
- (iv) What is the place value of 2 in $(327)_8$
- (d) What are the advantages of CD-ROM over magnetic storage media? (Any Two) (1)
- (e) What is the full form of USB? Give one advantage of using USB port over other types of ports. (1)
- (f) Give full forms of the following: (1)
1. RISC
 2. ISCH
- Q2. (a) Give an example each of exit controlled loop and entry controlled loop. (1)
- (b) Identify the kind of comments used in the following program segment mentioned under A and B parts. (1)

A-Part

```
/* this is a simple program which gives  
single line output */  
void main()  
{
```

```
cout<<"single line output";  
}
```

B-Part

```
void main()  
{ int x=100; // variable assigned value 100 here  
cout<<" output="<<x;  
}
```

(c) Pick keywords from the following list: (1)

(a) void (b) Rate (c) char (d) Income_tax
(e) switch (f) struct (g) CHAR (h) static

(d) #include<iostream.h> (1)

```
void main()  
{int a=7;  
for(int i=2;i<a;i++){  
cout<<" C++ Programming";  
cout<< "C++ is object oriented language\n";} cout << "End of the loop";}
```

Write the above program with proper indentation.

(e) Read the following statements, if incorrect, write the correct statements. (2)

- (1) Compile time errors are usually difficult to detect and correct than run-time errors.
- (2) Logical errors can easily be detected by the compiler.

(f) Identify the missing steps in creating the program : (2)

1. understanding the problem
2. _____
3. code the program
4. _____

(g) Why is self documenting code treated as one of the measures of good programming? Support your answer with example. (2)

- Q3. (a) What is the role of main() function in a C++ program? (1)
- (b) What is the purpose of #include directive? (1)
- (c) Rewrite the following statement using conditional operator: (1)
- ```
if (amount >= 8000)
 rate=9;
else
 rate=7;
```
- (d) Explain how are the following two statements different: (1)
- ```
int max=10;
const int max=10;
```
- (e) Write header files required for the following : (2)
- atoi()
 - strcmp()
 - sqrt()
 - gets()
- (f) Give the output of the following code segment: (2)
- (Note: Assume all necessary header files have been included)
- ```
void main()
{
 int a=100;
 cout << "Hello\tSachin!! \ncongrats for making 100"
 << "centuries \nSUPER";
 cout << setw(6)<<a;
}

```
- (g) Differentiate between the following with the help of examples : (2)
- = and == operators
  - / and % operators
- (h) The output of the following code is 6. Suggest the way to get correct answer i.e., 6.667 without changing the data type of the variables a, b, and c. Rewrite the code and mention the term used for it. (2)
- ```
#include<iostream.h>
void main( )
{
    int a=5,b=7,c=8;
    float per;
    per = (a+b+c)/3;
    cout << "Percentage is" << per;
}

```

- (i) 1. Give output if x=6 initially (3)

(2* ++x)%3

2. Write C++ expression for the following:

$$\text{Root1} = \frac{-b + \sqrt{b^2 - 4ac}}{2a}$$

3. Write C++ shorthand for the following :

(a) num=num/10;

(b) x=x+1;

- Q4. (a) Write a program which reads NAME, PER_MARKS and CATEGORY (1 for SC, 2 for OBC and 3 for General) of a student and adds 5% to PER_MARKS for CATEGORY 1 and 2. The program should display the message "SELECTED FOR ADMISSION" if PER_MARKS are greater than or equal to 80%. Otherwise it should display "NOT SELECTED". (3)

- (b) Write the output of the following code segment: (2)

```
char S[80]="PolyMOorph"; int L=strlen(S);
for (int i=0;i<L;i++)
{
    if (isupper(S[i])
        S[i]=tolower(S[i]);
    else
        if(i%2==0)
            S[i]='X';
        else
            S[i]='?';
}
```

- (c) Study the following program and select the correct option(s) out of the four choices given below as the possible set of such numbers generated from the program code. Justify your answer. (Assuming all necessary header files have been included) (2)

```
const int MIN = 1;
void main( )
{
    randomize ( );
    int NUM = 7 , DICE;
    for (int i = 1 ; i <= 4 ; i ++ )
    {
```

```

    DICE = MIN + random (NUM- i );
    cout << DICE << " : " ;
}
cout <<endl;
}

```

- (i) 3:3:3:4:
- (ii) 6:4:3:2:
- (iii) 2:3:4:5:
- (iv) 2:4:2:1:

(d) A user defined function print_line() is defined as: (3)

```

void print_line(char ch='*', int n=50)
{
    for (int i = 0; i<n; i++)
        cout <<ch;
    cout <<endl;
}

```

How will you invoke the function print_line() for following output

- (i) to print '*' 50 times
- (ii) to print '\$' 50 times
- (iii) to print '*' 20 times

Q5. (a) Give the output of the following program and answer the question given: (2)

```

(i) #include <iostream.h>
int x= 50;
void demo(int &a, int &b, int c)
{
    a=a+5;
    b=b+2;
    c=c-2;
}
void main( )
{
    int x = 25, y=5;
    demo(x, x,y);
    cout<< "x<<'<<x<<','<<y<<endl;
}

```

- (ii) Identify actual parameters and formal parameters in the code given in part (i).

- (b) Write a user defined function search() that takes 1-D array of integers, its size and value to be searched as parameters. The function should display the location if value is present otherwise it should display message “Value Not Found” (4)

Example :

Array is : 11 2 32 4 25

Value to be searched : 4

Output : Value present at index 3

- (c) Write a user defined function which accepts two matrices A[2][3] & B[2][3] as arguments and generate the difference of these matrices in the third matrix and also display it. (3)

For Example:

A[2][3] =	1	2	3	B[2][3]=	4	7	2
	5	8	10		12	14	8
C[2][3]=	-3	-5	1				
	-7	-6	2				

- Q6. (a) What is the purpose of using a typedef statement in C++? Explain with suitable example. (2)
- (b) Rewrite the corrected version of the following code and underline each correction: (2)

```
#include [iostream.h]
#define max=500;
int main()
{
    Num=5;
    if Num +max<300
        Num=Num+50;
    else
        Num-50=Num;
}
```

- (c) Convert the following C++ code using if - else statement: (3)

```
void main( )
{
char ch;
cout<<“\n Enter your choice(a,b,c): ”;
cin>>ch;
```

```

switch(ch)
{
    case 'A':
    case 'a': cout<<"ADDITION\n";
              break;
    case 'S':
    case 's': cout<<"SUBTRACT\n";
              break;
    case 'M':
    case 'm': cout<<"MULTIPLY\n";
              break;
    default: cout<<"Wrong Choice!!"; break;
}
}

```

- (d) Rewrite the following program using do - while looping construct : (3)

```

#include<iostream.h>
void main()
{   int first=0,second=1, third, n=10;
    cout<<"FIBONACCI SERIES\n";
    cout<< first<<"\t " <<second<<" \t" ;
    for (int i=3; i<=n ; i++)
    {   third=first + second;
        cout<<third<<" \t";
        first=second;
        second=third;
    }
}

```

- Q.7 (a) Consider the following code Segment. Identify the errors, if any in statement1 and statement2. Also write the correct statements: (2)

```

struct one
{   int a;
    float b:
};

```

```
struct two
{
    int a;
    float b;
};
void main( )
{
    one s1={2, 7.9};
    two s2;
    s2=s1;//statement 1
    one s3 = s1;//statement 2}
```

- (b) Declare a structure student that contains rollno, name and subject stream (N : Non Medical, M : Medical, A : Arts, C : Commerce). Write a program that creates an array to store data of 50 students. Count no. of students in each stream and display it. (4)