> Please check that this question paper contains **7** questions and **6** printed pages.

CLASS-XI
COMPUTER SCIENCE (083)

Time Allowed : 3 Hrs.   **Maximum Marks : 70**

General Instructions :

(i) *All the questions are compulsory.*

(ii) *The paper contains 7 questions.*

(iii) *Programming language used : C++*

(iv) *15 minutes time has been allotted to read this question paper. During this time, the student will read the question paper only, he/she will not write any answer on the answer book during this period.*

1. (a) What is the difference between compiler and interpreter ?   2

   (b) Name any two Antivirus Software.   1

   (c) Convert the following :   (1×4=4)

        (i) $(145)_{10} = (?)_2$

        (ii) $(1011.101)_2 = (?)_8$

        (iii) $(2A5)_{16} = (?)_2$

        (iv) $(241)_8 = (?)_{10}$

   (d) What is the difference between RAM and ROM ? (One difference)   1

   (e) 'Pen Drive is New Age Memory'. Explain how it works ?   1

   (f) Arrange the following units of storage in descending order :   1

        TB   KB   GB   MB

2. (a) What is bug in a program ?   1

   (b) How comments are given in a C++ program ?   1

   (c) Select correct identifiers from the list given below :   1

        (i) Income_Tax   (ii) S.I.   (iii) 2code
        (iv) break   (v) AGE

   (d) What is meant by program maintenance ?   1

   (e) What is the difference between an entry controlled loop and an exit controlled loop ? Explain giving an example.   2

(f) What is the purpose of indentation ? Indent the following program : 2
```
# include <iostream.h>
void main()
{int i; for (i=0; i<20; i++){ cout <<i; cout << endl;} }
```

(g) Differentiate between syntax errors and run time errors. Explain giving one example each. 2

3. (a) Suppose x1 and x2 are two integer type variables. Add x1 and x2 and assign to a long type variable. Construct a C++ statement for doing the same. 1

(b) How many bytes of memory is allocated to a and b, if a and b are declared as below : 1
```
                    signed int a;
                    long b;
```

(c) Differentiate between : 1
int val = 10;   and   const int val = 10;

(d) What is the difference between   x=3 and x = = 3 ? 1

(e) Name the header files to which the following functions belong : 2
  (i)   strlen ( )
  (ii) setw ( )
  (iii) sqrt ( )
  (iv) tolower ( )

(f) Why is main function special ? What would happen if main function is not present in the program ? 2

(g) What is Explicit type casting ? Explain giving example. 2

(h) Evaluate the following expressions : 2
  (i)   4 * 5 + 7 * 2 − 8 % 3 + 4
  (ii) (x>=y) & & (x + y) > x   if   x=9 and y=9

(i) Give output of the following program segments : 3
  (i)   int time, rate;
            cin >> time;
            rate=time>2 ? 7 : 6 ;
            cout <<rate;
        assume time given as input is 5 years

  (ii)   char ch = 'B' ;
            int x = ch;
            x++;
            cout << x << '\n' << ch;

  (iii) int   a = 10 ,   b = 1.5, c;
        c = (a++) * b + a;
        cout << "c="<<c<<endl ;
        cout << "a="<<a ;

4. (a) Topshop offers incentive to its members in the form of special discount. **3**
Discount is offered on the basis of bill amount as per the following
criteria :

Bill Amount	**Discount**
Less than 2000	5%
>=2000 and <4000	10%
>=4000 and <6000	15%
6000 and above	20%

Write a program/function which accepts bill amount and membership
number as input and calculates amount payable i.e.,
(Bill Amount – discount) and prints it.

(b) Give the output of the following program segment : **2**

```
char Iname [50] = "CommonWealth2010" ;
for (int i=0; i <strlen (Iname) ; i +=2)
{    if (isalpha (Iname [i] ) )
     Iname [i] = toupper ( Iname [i] ) ;
     else Iname [i] = Iname [i] + 1 ;
}
puts (Iname) ;
```

(c) Consider the following program code. Select the expected output from the options
(i) to (iv). Also justify your answer. **2**

```
# include <iostream.h>
# include <stdlib.h>
void main ( )
{    randomize () ;
     int x;
     x = random (3) + 1;
     for (int i = 0 ; i<=x ; ++i)
          cout << i << " ";
}
```

(i) 0 1 2 3 4   (ii) 1 2 3 4 5
(iii) 2 3 4 5   (iv) 0 1 2 3

(d) Write a function that takes an integer type variable as parameter and prints
the pattern as shown in the example : **3**

Example   **Input : 5**
            Output : 1
                       22
                       333
                       4444
                       55555

5. (a) Give the output of the following program : 2

```cpp
#include <iostream.h>
int x=10;
void change (int a, int & b, int c)
{   a=a+b;
    b=b+c;
    c=c+a;
    cout << a << '\t' << b << '\t' << c;
}
void main ()
{
    int x = 5, y = 10;
    change (x, y, : : x) ;
    cout << '\n' <<: :x<<'\t' <<x<<'\t' <<y;
}
```

(b) Write a function odd_product () that takes array – list and its 4
size as parameter and prints the product of all odd values
present in the array.

Example :   Input   :   Array is   3 4 6 12 6 7 5 2 6
size is 9

Output : Product of   3 7 5 = 105

(c) Write a function in C++ to print the sum of all the elements except 3
left diagonal elements of 3 × 3 matrix.

Example

Input : Array is   **3**   4   6
1   **5**   7
2   4   **8**

Output : Sum of matrix except left diagonal elements is 24
(i.e., 4+6+1+7+2+4=24)

6. (a) Consider the following program segment : 2

```cpp
#define AREA(a) a*a
void area(int a)
{
    return a*a;
}
```

```
void main()
{
    cout<<area(5+2)<<endl;          // Statement 1
    cout<< AREA(5+2)<<endl          // Statement 2
}
```

What will be the difference between output from statement 1 and statement 2 ? Explain.

(b) Rewrite the following program after correcting the error(s), if any. Also underline the corrections made.   2

```
# include<iostream.h>
void Assign (int , int) ;
int main ( )
{   present=25,   past=35 ;
    Assign (present ; past) ;
    Assign (past) ;
    getch () ;
}
voidAssign (int argl, int arg2=20)
{   argl=argl + arg2
    cout<< arg1>>arg2 ;
}
```

(c) Rewrite the following code using switch – case statement :   3

```
char code ;
int x, y, z ;
cin>>code;
if (code= ='A')
    cout<< "Accountant" ;
else if (code= = 'C' || code= = 'G')
    cout <<"Grade IV" ;
else if (code = = 'F' )
    cout<<"Financial Adviser"<<endl;
else cout <<"Wrong code" ;
```

(d) Rewrite the following using while loop   3

```
int   n=15, sume=0 ;
for (int i=2 ; i<=n ; i=i+2)
{   if (i % 3 == 0)
        sume + = i ;
}
```

7. (a) What will be the output of the following code : 2

```
struct Item
{
    int I_ no ;
    char I_name [20] ;
    float I_price ;
    int I_qty ;
} ;
void main ()
{
    Item S [4] =    { {1, "Bread", 11.0, 20} ,
                      {2, "Butter", 25.0, 40} ,
                      {3, "Cream", 65, 15} ,
                      {4, "Jam", 95.5, 20} } ;
    cout<<S [0] . I_no ;
    cout<<S [1] . I_name [3] ;
    cout<<S [2] . I_qty ;
    cout<<S [3] . I_name ;
}
```

(b) Declare a structure **time** that contains two members- hours and minutes of type integer. Write a function add_time( ) that takes two time as parameters and displays the sum of time (total time). 4

Example

Input   : time1   Hrs=2   Minutes = 54

Input   : time2   Hrs=5   Minutes = 20

Output : Total Time : 8 hrs 14 minutes

Note : Assuming minutes given as input are less than 60 as shown
in the example.