Roll No. ☐☐☐☐☐☐☐

CBSE GUESS PAPER

Time Allowed – 3 Hours   *Maximum Marks- 70*

General Instructions:
(i) All questions are **compulsory**.
(ii) The paper contains **7** *questions.*
(iii) Programming Language : 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) Illustrate the use of Reference variable in C++ with the help of an example.   2
(b) Name the header files(s) used for successive compilation of the following: 1

```
void main( )
{ char word[30];
  strcpy ( word, "Pre Board Examination ");
  int s = strlen (word);
  if(s%2= = 0)
  cout<<setw(10)<<word;
}
```

(c) Rewrite the following program after removing all syntactical error(s), if any. <u>Underline</u> each correction.

```
#include<iostream.h>                                                           2
int main()
{
structure student
{
int rno, mark;
}stu;
student stuA= (1001,49);
student stuB= stuA;
if (stuA!= stuB)
stuA.mark= 55;
else
stuB.mark= 25;
cout<<stuA.mark<<stub.mark;
}
```

(d) Find the output of the following program: 2

```
# include<iostream.h>
# include<ctype.h>
# include<string.h>
void change (char *state, int &s)
{ int b=s;
for (int x = 0; s >= 0; x++,s--)
if((x+s)%2)
 *(state+x) = toupper(*(state+b-x));
}
void main ( )
{ char s[ ] = "ODISHA";
int b = strlen(s)-1;
change(s, b);
cout<<s<<" # "<<b;
}
```

(e) What will be the output of the following program: 3

```
# include<iostream.h>
# include<ctype.h>
# include<iostream.h>
# include<string.h>
void manipulate( char string[ ], int &len)
{
for( int i=0; string[i]!='\0';i++)
        {
        if(isupper(string[i]))
        { string[i]= string[i]-2;
        len++;
        }
        else
        if(islower(string[i]))
        { string[i]=string[i]+2;
        len--;
        }
        else
        string[i]='#';
        }
}
void main( )
{
char    word[ ]= "FuN UnliMiTEd!";
int length=strlen(word);
manipulate(word, length );
cout<<word<<" @ "<<length;
}
```

(f) Chose the correct answer from the options (a) - (d). Justify your answer. 2

```
#include<iostream.h>
#include<stdlib.h>
#define Getval(N)     ((N%2==0)? N+1:N+2)
void main( )
{
randomize( );
int num=random(3)+3;
for( int I=num ; I<=num+2 ;I++)
cout<<Getval(I)<<'@';
}
Options:       (a) 3@5@7@              (b) 7@7@9@
               (c) 7@9@9@              (d) 7@9@11@
```

2. (a) What do you understand by constructor ? How is it different from other member functions ? 2
(b) Answer the questions (i) and (ii) after going through the following class. 2

```
class Maths
{
char chapter [20];
int marks;
public:
Maths (int x, char ch[ ])              // Function 1
{
----------------
----------------
}
```

```
        Maths (Maths &A1)                    // Function 2
        {
        ----------------
        ----------------
        }
      };
```
   (i) Complete the definitions of Function 1 and Function 2 in the above example.
   (ii) How would Member Function 1 and Member Function 2 get executed?
(c) Define a class Taxpayer, whose class description is given below:-   4
      Private Members:-
      int pan - to store the personal account no.
      char name[20] - to store the name
      float taxableinc - to store the total annual taxable income.
      float tax - to store the tax that is calculated.
      computetax ( )- A function to compute tax from the following rule

Total Annual Taxable Income	Rate of Taxation
Up to 60000	0%
Greater than 60000, less than = 150000	5%
Above 150000, upto 500000	10%
Above 500000	15%

      Public Members :-
      inputdata ( ) - A function to enter the data and call the computetax( ) function.
      dispdata( ) - To display all data members.
(d) Answer the questions (i) to (iv) based on the following: 4
      class drama
            {
            char dname[20];
            int dduration;
            protected:
            char dactors[10][20];
            public:
             void enterdrama( );
             void displaydrama( );
            };
      class realityshow : public drama
             {
             char rname[15];
            int rduration;
            protected:
            char rparticipants[15][20];
            public:
            void enterreality ( );
            void dispreality( );
            };
      class news : protected drama
             { int nduration;
             char nreader[10][15];
             public:
             void enternews( );
             void dispnews( );
            };
   (i) Write the names of all members accessible from void dispnews( ) of class news.
   (ii) Write name of all data members accessible from object of class realityshow.
   (iii) Calculate size of an object of class realityshow.
   (iv) Write the names of all member functions accessible from object of class news.

3. (a) Write a function in C++ to swap column elements of a two dimensional integer array. 0th column with $(n-1)^{th}$ column, 1st column with $(n-2)^{nd}$ column and so on. The array and sizes are passed as the arguments to the function.　　　　　3

Ex. If the two dimensional array contains :

2	4	10	48
4	5	20	55
6	3	30	45
10	65	23	31

The array after swapping is as follows :

48	10	4	2
55	20	5	4
45	30	3	6
31	23	65	10

(b) An array Arr[15][35] is stored in the memory along the row with each element occupying 8 bytes. Find out the address of the location Arr[2][5], if the location Arr[5][10] is stored at the address 4000.　　　3

(c) Consider the following program for linked **STACK**:　　　3

```
struct node
{ int x;
float y;
node *link;
};
class stack
{
node *top;;
public :
stack( )
{ top = NULL;
}
void push( );
void pop( );
void show( );
~stack( );
};
```

Define **pop( )** function outside the class.

(d) Write a function to add an element to a dynamically allocated **QUEUE**. The structure of each node is given below :　　　3

```
struct node
{ int vid;
char vname[20];
node *next;
};
```

(e) Evaluate the following postfix expression using a stack and show the contents of stack after execution of each operation.　　　2

　　　　　45, 9, 6, +, /, 21, +, 6, *

4.(a) Observe the program segment given below carefully and fill the blanks marked as Statement1 and Statement 2 using seekg( ) and tellg( ) functions for performing required task.　　　1

```
#include<fstream.h>
class Employee
{ int Eno; char Ename[20];
public:
int Countrec( );   //Function to count the total no of records
};
```

```
        int Employee :: Countrec( )
        {
        fstream File;
        File.open("EMP.DAT",ios::binary | ios::in);
        //To take the file pointer to the end of file

        _____        //Statement 1
        //To return total number of bytes from the beginning of file to the file pointer
        int Bytes = _____        //Statement 2
        int Count = Bytes/sizeof(Employee);
        File.close();
        return Count;
        }
```

(b) Write function in C++ to count the number of words starting with uppercase consonants present in
a text file "NOTES.TXT".   2
(c)Write a function in C++ to add new objects at the bottom of a binary file "STUDENT.DAT", assuming the
binary file is containing the objects of the following class.   3

```
class STUD
{
 int Rno;
 char Name[20];
 public:
 void Enter( )     { cin>>Rno;  gets(Name); }
 void Display ( ) { cout<<Rno<<Name<<endl; }
};
```

5.(a) Given below two relations, perform following operations and display result.   2

R1

A	B	C
xx	1	a
yy	3	b
zz	5	k
uu	9	m

R2

A	B	C
yy	3	b
uu	9	m
pp	8	c

   i) R1 U R2   ii) R1 ∩ R2

(b) Consider the following tables **BOOKING** and **PACKAGE** and write SQL commands for (i) to (iv) and
outputs for (v) and (vi).   6

BOOKING

Pcode	Tourist Name	Agency	No_of_persons	Tdate
P5	Raghavendra	Voyager	2	23-dec-10
P2	Hardep	Pristine	4	12-jan-11
P5	Shazia	Go Now	6	25-dec-10
P6	Lizza	Pristine	2	28-dec-10
P3	Diana	Voyager	4	19-mar-11
P6	Harshal	Go Now	4	21-mar-11
P1	Rajiv Khanna	Travels	12	12-apr-11
P1	Veena Sethi	Voyager	5	01-apr-11

PACKAGE

| Pcode	Pname	Per_Person_amt
P1	Kerala	20000
P2	Malaysia	35000
P3	Goa	56525
P4	Manali	15000
P5	Simla	12000
P6	Singapore	75450

(i) Display the name of all the tourists, their travel dates, names of the places they are traveling to and the total amount to be payed by each tourist.

(ii) Display the name of the agencies from the BOOKING whose Tourist name is starting with R.

(iii) Arrange the contents of the table BOOKING in ascending order of travel date.

(iv) Display the no_of_persons traveling of each travel agency.

(v) SELECT Tourist Name, Agency, Pname from BOOKING, PACKAGE where BOOKING.Pcode = PACKAGE.Pcode and Per_person_amt>35000;

(vi) SELECT Agency, sum(No_of_persons) from BOOKING group by agency having sum(No_of_persons)>10;

6. (a) State De'Morgans Law and algebraically verify one of them.   2
(b) Write the POS form of a Boolean Function F, which is represented by the following truth table: 1

A	B	C	F
0	0	0	0
0	0	1	1
0	1	0	1
0	1	1	1
1	0	0	1
1	0	1	0
1	1	0	0
1	1	1	1

(c) Obtain the simplified form of the Boolean Expression using K' Map: 3
$$F(A, B, C, D) = \Sigma(0,1,2,4,5,8,9,12,13,15)$$
(d) Represent OR operation using NAND gates only.   1
(e) Write the equivalent Canonical Product of Sum for the following expression.   1
$$F(X, Y, Z) = \Sigma(1,2,3,4)$$

7. (a) Compare any two Switching techniques.   2
(b) What do you mean by Telnet ?   1
(c) Differentiate between Shareware and Freeware ?.   1
(d) Expand the followings :   2
     i) SIM,   ii) FSF,   iii) PPP,   iv) POP3
(e) Rajdhani Public Ltd. has decided to network all its offices spread in five buildings(Shown below).
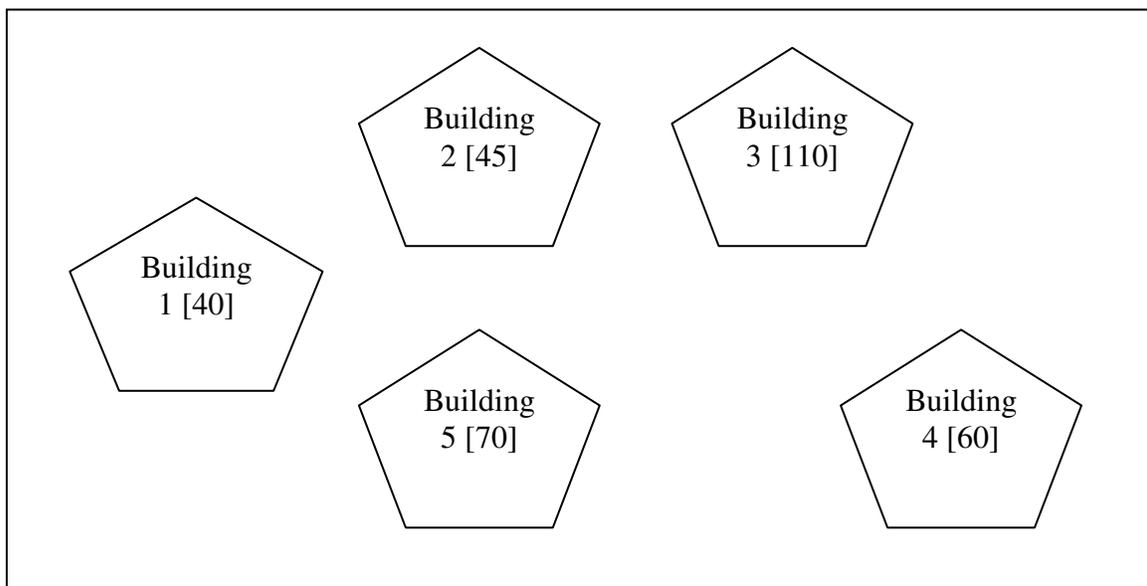
The distance between buildings are given below:

Between 1 & 2	20 Mts		Between 3 & 5	70 Mts
Between 2 & 3	50 Mts		Between 1 & 5	65 Mts
Between 3 & 4	120 Mts		Between 2 & 5	50 Mts
Between 4 & 5	30 Mts			

(i) Suggest cable layout(s) for connecting the buildings.   1
(ii) Suggest the most suitable building to install the server of this organization with a suitable reason with
 justification.   1
(iii) In each of the building, the management wants that each LAN segment gets a dedicated bandwidth i.e.
bandwidth must not be shared. How can this be achieved ?   1
(iv) The company wants to link another office in Japan. How can link be established with this office.
(i.e. suggest the transmission medium).   1

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