**Guess Paper-2012**

**Computer Science**

**Class – XII**

**Time: 3Hours Maximum Marks: 70**

**Note. (i) All questions are compulsory.**

**(ii) Programming Language: C++**

**1.(a)** Give the difference between the type casting and automatic type conversion .Also, give a suitable C++ code to illustrate both. 2

**(b)**Write the names of the header files to which the following belong: 2

(i) strcmp ( ) (ii) sin ( ) (iii) exp () (iv) isupper ()

**(c)** Rewrite the following program after removing syntactical error(s) if any. Underline each correction. 2

#include [iostream.h]

class MEMBER

{

int Mno;float Fees;

PUBLIC:

void Register(){cin>>Mno>>Fees;}

void Display{cout<<Mno<<" : "<<Fees<<endl;}

};

void main()

{

MEMBER M;

Register();

M.Display();

}

**(d)** Find the output of the following program; 3

#include<iostream.h>  
 #include<ctype.h>   
 void main( )  
 {   
 char TEXT1[ ] = “Cbse@Board!”;   
 for(int I=0; TEXT1 [I]!=’\0’;I++)  
 {  
 if(!isalpha(TEXT1[I]))  
 TEXT1[I]=’\*’;   
 else if(isupper(TEXT1 [I]))  
 TEXT1[I]=TEXT1[I]+1;   
 else TEXT1[I] = TEXT1[I+1];  
 }  
 cout<<TEXT1;   
 }

**(e)** Find the output of the following program: 3

#include<iostream.h>

#include<ctype.h>

#include<conio.h>

void ChangeIt(char Text[],char C)

{

for(int k=0;Text[k]!='\0';k++)

{

if(Text[k]>='F'&& Text[k]<='L')

{

Text[k]=tolower(Text[k]);

}

else if(Text[k]=='E'||Text[k]=='e')

{

Text[k]=C;

}

else if(k%2==0)

{

Text[k]=toupper(Text[k]);

}

else

{

Text[k]=Text[k-1];

}

}

}

void main()

{

clrscr();

char OldText[]="pOwERAlone";

ChangeIt(OldText,'%');

cout<<"New TEXT:"<<OldText<<endl;

getch();

}

**(f)**In the following program, if the value of N given by the user is 20, what maximum and minimum values the program could possibly display? 2

#include<stdlib.h>  
#include<iostream.h>  
void main( )   
{

int N,Guessnum;  
 randomize( );   
 cin>>N;

Guessnum=random(N-10)+10;

cout<<Guessnum<<endl;

}

**2 (a)** What do you understand by Data Encapsulation and Data Hiding? Also, give a suitable C++ code to illustrate both. 2

**(b)** What is polymorphism? Explain with example. 2

**(c)** What is Actual parameter and formal parameter in C++? 2

**(d)** Define a class FLIGHT in C++ with following description: 4

**Private Members:**

• A data member Flight number of type integer

• A data member Destination of type string

• A data member Distance of type float

• A data member Fuel of type float

• A member function CALFUEL () to calculate the value of Fuel as per the

following criteria :

**Distance**  **Fuel**

<=1000 500

more than 1000 and <=2000 1100

more than 2000 2200

**Public Members:**

•" A function FEEDINFO() to allow user to enter values for Flight Number,

Destination, Distance & call function CALFUEL() to calculate the quantity of Fuel

•" A function SHOWINFO() to allow user to view the content of all the data members.

**3 a)** A Class student has three data members: name, roll number, marks of 5 subjects and member function to assign streams on the basis of table given below:

**Average Marks Stream**

96% or more Computer Science

91%-95% Mathematics

86%-90% Physics

81%-85% Chemistry

76%-80% Biology

71%-75% English

Declare the class student and define the member function. 4

**(b)** An array S [40][30] is stored in the memory along the row with each of the element occupying 2 bytes, find out the memory location for the element S[20][10],if the Base Address of the array is 5000. 4

**(c) Find the output of the following program:** 2

#include <iostream.h>

void Changethecontent(int A[ ],int count)

{

for(int i=1;i<count;i++)

A[i-1]+=A[i];

}

void main()

{

int A[ ]={3,4,5},B[ ]={10,20,30,40},C[ ]={900,1200};

Changethecontent(A,3);

Changethecontent(B,4);

Changethecontent(C,2);

}

for(int L=0;L<3;L++) cout<<A[L]<<’£’;

cout<<endl;

for(L=0;L<4;L++) cout<<’£’;

cout<<endl;

for(L=0;L<2;L++) cout<<C[L]<<’£’;

}

4. **a)** What is the difference between Object Oriented Programming and Procedural Programming? 2

**b)** What is the difference between an object and a class? 2

**c)** An array VAL[1…15][1…10] is stored in the memory with each element requiring 4 bytes of storage. If the base address of the array VAL is 1500, determine the location of VAL[12][9] when the array VAL is stored (i) Row wise (ii) Column wise. 6

**5. a)** What is the difference between Local Variable and Global Variable? Illustrate it. 2

**b)** Differentiate between the post-increment and pre-increment operators. Also, give a suitable C++ code to illustrate both. 2

**6. (a)** State and verify Distribution Law in Boolean algebra. 2

**(b)** Draw a Logical Circuit Diagram for the following Boolean Expression: 2 X’. (Y’+Z)

**(c)** Write the POS form of a Boolean function G, which is represented in a truth table as follows: 1

|  |  |  |  |
| --- | --- | --- | --- |
| P | Q | R | G |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 1 | 0 |
| 0 | 1 | 0 | 1 |
| 0 | 1 | 1 | 0 |
| 1 | 0 | 0 | 1 |
| 1 | 0 | 1 | 0 |
| 1 | 1 | 0 | 1 |
| 1 | 1 | 1 | 1 |

**(d)** Reduce the following Boolean expression using k-map: 3

F(A,B,C,D)=∑(0,1,2,4,5,8,9,10,11)

7. (**a**)What is the difference between LAN and WAN? 2

**(b)**What do you mean by IP address? How is it useful in Computer Security? 2

**(c)** Expand the following terms: 3

a) GSM b) HTML c) XML d) HTTP e) TCP/IP f) FTP

**(d)** What is a network? What are the benefits of networks? 3

**(e)** Knowledge Supplement Organization has set up its new centre at Mangalore for its office and web based activities. It has four buildings as shown in the diagram below: 4

Gamma

Alpha

Beta

Lambda

Center to center distance between various buildings Number of Computers

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Alpha to Beta | 50m |  | Alpha | 25 |
| Beta to Gamma | 150m |  | Beta | 50 |
| Gamma to Lambda | 25m |  | Gamma | 125 |
| Alpha to Lambda | 170m |  | Lambda | 10 |
| Beta to Lambda | 125m |  |  |  |
| Alpha to Gamma | 90m |  |  |  |

* 1. Suggest a cable layout of connections between the buildings
  2. Suggest the most suitable place (i.e. building) to house the server of this organization with a suitable reason.
  3. Suggest the placement of the following devices with justification:
     1. Repeater
     2. Hub/Switch
  4. The organization is planning to link its front office situated in the city in a hilly region where cable connection is not feasible, suggest an economic way to connect it with reasonably high speed?