**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?