

Delhi Public School, Jammu

Question Bank

Class : XII

(2017- 18)

Subject : Computers

Q1. (a) What is the difference between Local Variable and Global Variable?

Also, give a suitable C++ code to illustrate both.

Ans Local Variables: Local variables are those variables which are declared within a function or a compound statement and these variables can only be used within that function/scope.

Global Variables: Global variables are those variables which are not declared within any function or scope. So, these variables can be accessed by any function of the program.

Example

```
#include<iostream.h>
#include<conio.h>
int G; // Global variable declared

void Fun ( )
{
int L = 25;          // Local variable of function Fun ( ) assigned value 25
G=5;                // Global Variable is accessed and assigned value 5
Cout<<G<<endl;     // Value of global variable is displayed as 5
Cout<<L<<endl;     // Value of local variable is displayed as 25
}
void main ( )
{
Fun ( ) ;           // Function call
G = G + 5;          // Global variable is incremented by 5
cout<<G<<endl;     // Global variable is displayed as 10
}
```

Q2. Write the names of the header files, which is/are essentially required to run/execute the following C++ code:

```
void main ( )
{
char C, String [ ] = "Excellence Overload";
for (int I=0; String [ I ] != '\0'; I ++ )
if (String [I] == ' ')

cout<<endl;
else
{
C=toupper(String[I]);
cout<<C ;
}
}
```

Ans iostream.h

ctype.h

Q3. Rewrite the following program after removing the syntactical errors (if any).

Underline each correction.

```
Ans #include[iostream.h]
typedef char Text(80) ;
void main ( )
{
Text T= "Indian";
int Count=strlen(T) ;
cout<<T<<'has'<<Count<< 'characters' <<endl;
}
```

```
Ans #include<iostream.h>
#include<string.h>
typedef char Text [80];
void main ( )
{
Text T= "Indian";
int Count=strlen(T);
cout<<T<< "has" <<Count<< "characters"<<endl ;
```

Q4. Find the output of the following program:

```
Ans #include<iostream.h>
void ChangeArray(int Number, int ARR[ ], int Size)
{
for (int L =0; L<Size; L++)
if (L<Number)
ARR [L] +=L;
else
ARR [L] *=L;
}
void Show (int ARR [ ], int Size)
{
for (int L=0; L<Size; L++)
(L%2!=0) ?cout<<ARR[L] <<"#": cout<<ARR[L]<<endl ;
}
void main ( )
{
int Array [ ] = {30, 20, 40, 10, 60, 50};
ChangeArray (3, Array, 6) ;
Show (Array, 6) ;
```

Ans 30
21#42
30#240
250#

Q5. Find the output of the following program:

```
Ans #include<iostream.h>
void main ( )
{
int Track [ ] = {10, 20, 30, 40}, *Striker ;
Stxiker=Track :
Track [1] += 30 ;
cout<<"Striker"<<*Striker<<endl ;
Striker – =10 ;
Striker++ ;
cout<<"Next@"<<*Striker<<endl ;
Striker+=2 ;
cout<<"Last@"<<*Striker<<endl ;
cout<< "Reset To" <<Track[0] <<endl ;
}
```

Ans Striker>10
Next@50
Last@40
Reset to 0

Q6. Go through the C++ code shown below, and find out the possible output or outputs from the suggested Output Options (i) to (iv). Also, write the least value and highest value, which can be assigned to the variable Guess.

```
#include <iostream.h>
#include <stdlib.h>
void main ( )
{
randomize ( ) ;
int Guess, High=4;
Guess=random{High)+ 50 ;
for{ int C=Guess ; C<=55 ; C++}
cout<<C<<"#" ;
}
```

(i) 50 # 51 # 52 # 53 # 54 # 55 #

(ii) 52 # 53 # 54 # 55

(iii) 53 # 54 #

(iv) 51 # 52 # 53 # 54 # 55

Ans (i) 50 # 51 # 52 # 53 # 54 # 55 #
Least value 50
Highest value 53

Q7. Differentiate between members, which are present within the private visibility mode with those which are present within the public visibility modes.

Ans Private members of a class are accessible only to the member functions of the same class.

Public members of a class are accessible to the member functions of the same class as well as member functions of its derived class(es) and also to an object of the class.

Example:

```
class Base
{
int N;
public:
    void Assign ()

{
N=10;
}
};
class Derived: public Base
{
int X;
public:
void DisplayBase()
{
cout<<N; //Not Accessible
Assign ( ) ; //Accessible
}
};

void main ( )

{
Base B;
B.Assign( ) ; //Accessible
}
```

Q8. Write the output of the following C++ code. Also, write the name of feature of Object Oriented Programming used in the following program jointly illustrated by the function [I] to [IV].

```
#include<iostream.h>
void Print ( ) // Function [I]
{
for (int K=1 ; K<=60 ; K++) cout<<"-" ;
cout<<endl ;
}
void Print (int N) // Function [II]
{
for (int K=1 ; K<=N ; L++) cout<<"*" ;
cout<<endl ;
}
void Print (int A, int.B) //Function [III]
{
for (int K=1. ;K<=B ;K++) cout <<A*K ;
```

```

cout<<endl ;
}
    void Print (char T, int N)    // Function [IV]

{
for (int K=1 ; K<=N ; K++) cout<<T ;
cout<<endl;
}
void main ( )
{
int U=9, V=4, W=3;
char C='@' ;
Print (C,V) ;
Print (U,W) ;
}

```

Ans. @@@@

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OR

No Output as L is not declared in void Print (int N)

Polymorphism

OR

Function Overloading

Q9. Define a class Candidate in C++ with following description: 4

Private Members

- _ A data member RNo (Registration Number) of type long
- _ A data member Name of type string
- _ A data member Score of type float
- _ A data member Remarks of type string

- _ A member function AssignRem() to assign Remarks as per the Score

obtained by a candidate. Score range and the respective Remarks are shown as follows:

Score Remarks

>=50 Selected

less than 50 Not selected

Public Members

- _ A function ENTER () to allow user to enter values for RNo, Name, Score & call function AssignRem() to assign the remarks.
- _ A function DISPLAY () to allow user to view the content of all the data members.

Ans class Candidate

```

{
long RNo;
char Name[20];
float Score;
char Remarks[20];
void AssignRem( ) ;
}

```

```

public:
void Enter( );
void Display( );
};
void Candidate: :AssignRem( )
{
if (Score>=50)
strcpy (Remarks,"Selected") ;
else
    strcpy(Remarks,"Not Selected") ;

```

```

void Candidate: : Enter ( )
{
cin>>RNo ;
gets (Name) ; cin>>Score;
AssignRem( ) ;
}
void Candidate: :Display()
{
cout<<RNo<<Name<<Score<<Remarks<<endl;
}

```

Q10. Answer the questions (i) to (iv) based on the following:

```

class Strident
(
int Rno;
char Name [20] ;
float Marks;
protected:
void Result( ) ;
public:
Student( ) ;
void Register( ) ; void Display( ) ;
};
class Faculty
{
long FCode;
char FName[20];
protected:
float Pay;
public :
Faculty ( ) ;
void Enter ( ) ;
void Show ( ) ;
};
class Course : public Student, private Faculty
{
long CCode [10]; char CourseName [50] ;
char StartDate[8], EndDate[8] ;

```

```

public :
Course ( ) ;
void Commence ( ) ;
void CDetail ( ) ;
};

```

(i) Which type of inheritance is illustrated in the above C++ code?

Ans Multiple Inheritance

(ii) Write the names of the all data members, which is/are accessible from member function Commence of class Course.

Ans CCode, CourseName, StartDate, EndDate, Pay

(iii) Write the names of member functions, which are accessible from objects of class Course.

Ans Commence(), CDetail(), Register(), Display()

(iv) Write the name of all the members, which are accessible from objects of class Faculty.

Ans Enter(), Show()

Q11. Write a Get1From2 () function in C++ to transfer the content from two arrays FIRST[] and SECOND[] to array ALL[]. The even places (0, 2, 4, ...) of array ALL[] should get the content from the array FIRST[] and odd places (1, 3, 5,) of the array ALL[] should get the content from the array SECOND[].

Example:

If the FIRST[] array contains

30, 60, 90

And the SECOND[] array contains

10, 50, 80

The ALL[] array should contain

30, 10, 60, 50, 90, 80

Ans

```

void Get1From2 (int ALL[],int FIRST[],int SECOND[],
int N,int M)

```

```

{
for(int I=0,J=0,K=0;i<N+M; I++)
if (I%2==0)
ALL[I]=FIRST[J++];
else
ALL[I]=SECOND[K++];
}

```

OR

```

void Get1From2(int ALL[],int FIRST[],int SECOND[],
int N, int M)

```

```

{
int J=0,K=0;
for(int I=0;i<N+M; I++)
{
if (I%2==0)

```

```

{
ALL [I] =FIRST [J] ;
J++;
}
else
{
ALL[I]=SECOND[K];
K++;
}
}
}

```

Q12. An array P[20] [50] is stored in the memory along the column with each of its element occupying 4 bytes, find out the location of P[15][10], if P[0][0] is stored at 5200.

Ans Assuming LBR=LBC=0

B=5200

W=4 bytes

Number of Rows(N)=20

Number of Columns(M)=50

LOC(Arr[I] [J]) = B +(I + J*N)*W

LOC(Arr[15][10]) = 5200+(15+10*20)*4

= 5200 + (215*4)

= 5200 + 860

= 6060

Q13. Write a function in C++ to perform Insert: operation on a dynamically allocated Queue containing Passenger details as given in the following definition of

NODE. 4

struct NODE

```

{
long Pno; //passenger Number
char Pname[20] ; //passenger Name
NODE *Link.;
};

```

Ans class Queue

```

{
NODE *Front, *Rear;
public:
Queue () {Front = NULL; Rear = NULL; }
void QueInsert () ;
void QueDel () ;
void QueDis () ;
~Queue () ;
};
void Queue: : QueInsert ()
{
NODE*Temp=new NODE;
cin>>Temp->Pno; gets (Temp->Pname) ;
Temp->Link = NULL;

```



```
Rear->Li.nk = Temp;
Rear = Temp ;
}
```

Q14. Write a COLSUM() function in C++ to find sum of each column of a NxM Matrix.

```
Ans void COLSUM(int A[] [100], int N, int M)
{
int SUMC;
for (int j=0; j<M; j++)
{
SUMC = 0;
for (int i=0; i<N; i++)
SUMC = SUMC + A[i] [j] ;
Cout<< "Sum of Column "<<j<<" = "<<SUMC ;
}
}
```

Q15. Evaluate the following postfix notation of expression:

50, 60, +, 20, 10, -, *

Ans	Element	Scanned STACK
	50	50
	60	50, 60
	+	110
	20	110, 20
	10	110, 20, 10
	-	110, 10
	*	1100

Q16. Observe the program segment given below carefully and fill the blanks marked as Statement 1 and Statement 2 using seekg(), seekp(), tellp() and tellg() functions for performing the required task.

```
#include<fstream.h>
class PRODUCT
{
int Pno; char Pname[20]; int Qty;
public :
:
void ModifyQty( ) ;
// The function is to modify quantity of a PRODUCT
};
void PRODUCT: :ModifyQty ( )
{
fstream File ;
Fil.open ("PRODUCT.DAT", ios::binary |ios : : in| ios: :out) ;
int MPno;
cout<<"Product No to modify quantity : "; cin>>MPNo;
While (Fil.read ((char*) this, sizeof (PRODUCT))
{
if (MPno == Pno)
{
```

```

Cout<<"Present Quantity:"<<Qty<<endl ;
cout<<"Changed Quantity:";cin>>Qty ;
int Position = _____; //Statement 1
_____ ; // Statement 2
Fil.write ((char*) this, sizeof (PRODUCT)) ;
//Re-writing the record
}
}
Fil.close ( ) ;
}

```

Ans Option 1
Statement 1: File. tellp () ;
OR File.tellg () ;
Statement 2: File.seekp (FilePos - sizeof (PRODUCT)) ;
OR File.seekp (-sizeof (PRODUCT), ios: :cur));
OR File.seekg (FilePos - sizeof (PRODUCT));
OR File.seekg (-sizeof (PRODUCT), ios: :cur));
Option 2
Statement 1: File.tellp () - sizeof (PRODUCT) ;
OR File.tellg () - sizeof (PRODUCT) ;
Statement 2: File. seekp (FilePos) ;
OR File.seekg (FilePos) ;

Q17. Write a function in C++ to count the no. of "Me" or "My" words present in a text file "DIARY. TXT".

If the file "DIARY.TXT" content is as follows:

My first book was Me and My family. It gave me chance to be known to the world.

The output of the function should be

Count of Me/My in file : 4

Ans void COUNT ()
{
ifstream Fil ("DIARY. TXT") ;
char STR [10] ;
int count = 0 ;
while (!Fil.eof ())
{
Fil>>STR;
if (strcmp (STR, "Me")==0 || strcmp (STR, "My") ==0)
count++;
}
Cout<<"Count of Me/My in file : "<<count<<endl;
Fil.close () ; //Ignore
}

Write a function in C++ to search for a laptop from a binary file

Q18. "LAPTOP.DAT" containing the objects of class LAPTOP (as defined below).

The user should enter the Model No and the function should search and display the details of the laptop.

```
class LAPTOP
{
long ModelNo ;
float RAM, HDD ;
char Details [120] ;
public:
void StockEnter ( )
{cin>>ModelNo>>RAM>>HDD; gets (Details);}
void StockDisplay ( )
{cout<<ModelNo<<RAM<<HDD<<Details<<endl;}
long ReturnModelNo ( ) {return ModelNo ;}
};
```

```
Ans void Search( )
{
LAPTOP L;
long modelnum;
cin>>modelnum;
ifstream fin;
fin.open ("LAPTOP.DAT", ios: :binary | ios: :in);
while(fin.read ((char*) &L,sizeof (L)))
{
if (L.ReturnModelNo ( ) == modelnum)
L.StockDisplay ( ) ;
}
Fin.close() ; //Ignore
}
```

OR

```
void Search (long modelnum)
{
LAPTOP L;
ifstream fin;
fin.open ("LAPTOP.DAT", ios: :binary | ios: :in) ;
while (fin.read ((char*) &L,sizeof (L)))
{
if (L.ReturnModelNo ( ) == modelnum)
L.StockDisplay ( ) ;
}
fin.close ( ) ; //Ignore
```

Q19. Consider the following tables WORKER and PAYYLEVEL and answer (b) and (c) parts of this question:

Table: WORKER

ECODE	NAME	DESIG	PLEVEL	DOJ	DOB
11	Radhe Shyam	Supervisor	P001	13- Sep- 2004	23-Aug-1981
12	Chander Nath	Operator	P003	22-Feb-2010	12-Jul-1987
13	Fizza	Operator	P003	4-Jun-2009	14-Oct-1983

15	Ameen Ahmed	Mechanic	P002	21-Aug-2006	13-Mar-1984
18	Sanya	Clerk	P002	19-Dec-2005	09-Jun-1983

Table: PAYLEVEL

PLEVEL	PAY	ALLOWANCE
P001	26000	12000
P002	22000	10000
P003	12000	6000

(b) Write SQL commands for the following statements:

(i) To display the details of all WORKERs in descending order of DOB.

```
SELECT FROM WORKER ORDER BY DOB DESC;
```

(ii) To display NAME and DE;SIG of those WORKERs, whose PLEVEL is either P001 or P002.

```
SELECT NAME, DESIG FROM WORKER
WHERE PLEVEL IN ('P001', 'P002');
```

OR

```
SELECT NAME, DESIG FROM WORKER
WHERE PLEVEL = 'P001' OR PLEVEL= 'P002';
```

(iii) To display the content of all the WORKERs table, whose DOB is in between '19-JAN-1984' and '18-JAN-1987'.

```
SELECT * FROM WORKER
WHERE DOB BETWEEN '19-JAN-1984' AND '18-JAN-1987';
```

OR

```
SELECT * FROM WORKER
WHERE DOB >= '19-JAN-1984' AND DOB<='18-JAN-1987';
```

OR

```
SELECT * FROM WORKER
WHERE DOB > '19-JAN-1984' AND DOB<'18-JAN-1987';
```

(iv) To add a new row with the following:

19, 'Daya Kishore', 'Operator', 'P003', '19-Jun-2008', '11-Jun-1984'

```
INSERT INTO WORKER
```

```
VALUES (19, 'Daya Kishore', 'Operator', 'P003', '11-Jun-1984');
```

Give the output of the following SQL queries:

(i) SELECT COUNT (PLEVEL), PLEVEL FROM WORKER GROUP BY PLEVEL;

Ans. COUNT (PLEVEL)	PLEVEL
1	P001
2	P002
2	P003

(ii) **SELECT MAX (DOB), MIN (DOJ) FROM WORKER;**
MAX (DOB) MIN (DOJ)
 12-Jul-1987 13-Sep-2004

(iii) **SELECT Name, Pay FROM WORKER W, PAYLEVEL P**
WHERE W. PLEVEL = S. PLEVEL AND P.ECODE<13 ;

Name	Pay
Radhe Shyam	26000
Chander Nath	12000

(iv) **SELECT PLEVEL, PAY+ALLOWANCE FROM PAYLEVEL**

WHERE PLEVEL= 'P003' ;

PLEVEL	PAY+ALLOWANCE
P003	118000

Q20. Differentiate between packet switching and message switching technique in network communication.

Ans Packet switching: In packet switching, a fixed size of data packet that can be transmitted across the network is specified and then the data packets are sent through switching stations to the final destination. All the packets are stored in the main memory instead of disk. As a result accessing time of packets is reduced.

Message switching: The source computer sends data (message) to the switching station, which stores data in a buffer. It then looks for a free link to another switching station and sends data to that station. This process continues until data is delivered to the destination computer. This type of switching technique is also known as "store and forward" switching.

Q21. Find the output of the following program:

```
#include<iostream.h>
void main ( )
{
int *Queen, Moves [ ] = { 11, 22, 33, 44};
Queen = Moves;
Moves [2] += 22;
Cout<< "Queen @"<<*Queen<<endl;
*Queen - = 11;
Queen + = 2;
cout<< "Now @"<<*Queen<<endl;
Queen++;
cout<< "Finally@"<<*Queen<<endl;
cout<< "New Origin @"<<Moves[0]<<endl;
}
```

Ans Queen @11
 Now @55
 Finally @44
 New origin @0

Q22. Go through the C++ code shown below, and find out the possible output or outputs from the suggested Output Options (i) to (iv). Also, write the minimum and maximum values, which can be assigned to the variable MyNum.

```
#include<iostream.h>
#include <stdlib.h>
void main ( )
{
randomize ( ) ;
int MyNum, Max=5;
MyNum = 20 + random (Max) ;
for (int N=MyNum; N<=25;N++)
cout<<N<<"*";
}
```

(i) 20*21*22*23*24*25

(ii) 22*23*24*25*

(iii) 23*24*

(iv) 21*22*23*24*25

Ans ii) 22*23*24*25*
 Minimum value 20
 Maximum value 24

Q23. Write the output of the following C++ code. Also, write the .name of feature of Object Oriented Programming used in the following program jointly illustrated by the function [I] to [IV]

```
#include<iostream.h>
void Line ( ) //Function [I]
{
for (int L=1;L<=80;L++) cout<<"-";
cout<<endl;
}
void Line (int N) //Function[II]
{
for (int L=1;L<=N;L++) Cout<<"*";
cout<<endl;
}
void Line (char C, int N) //Function [III]
{
for (int L=1;L<=N;L++) cout<<C;
cout<<endl;
}
void Line (int M, int, N) //Function [IV]
{
for (int L=1;L<=N;L++) cout<<M*L;
cout<<endl;
}
void main ( )
{
int A=9, B=4, C=3;
```

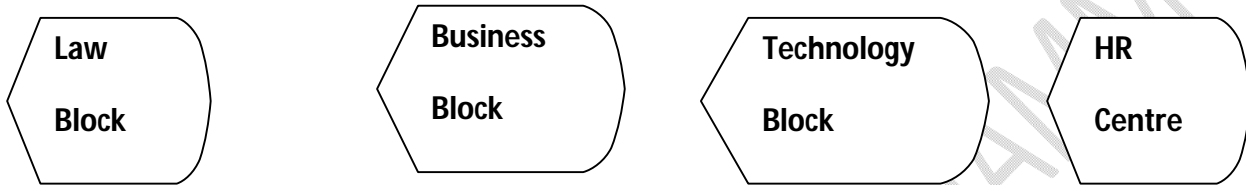
```

char K= '#' ;
Line (K,B);
Line (A,C);
}
Ans #####
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```

Polymorphism OR Function Overloading

Q24. Quick learn University is setting up its Academic blocks at Prayag Nagar and planning to set up a network. The university has 3 academic blocks and one Human Resource Center as shown in the diagram below.



Center to center	distance between various block/center is as follows"
Law Block to Business Block	40m
Law Block to Technology Block	80m
Law Block to HR Center	105m
Business Block to Technology Block	30m
Business Block to HR Center	35m
Technology Block to HR Center	15m

Number of Computers in each of the Blocks/Centre is follows:

Law Block	15
Technology Block	40
HR Center	115
Business Block	25

a) Suggest the most suitable place (i.e. Block/Center) to install the server of this university with a suitable reason.

Ans HR center:

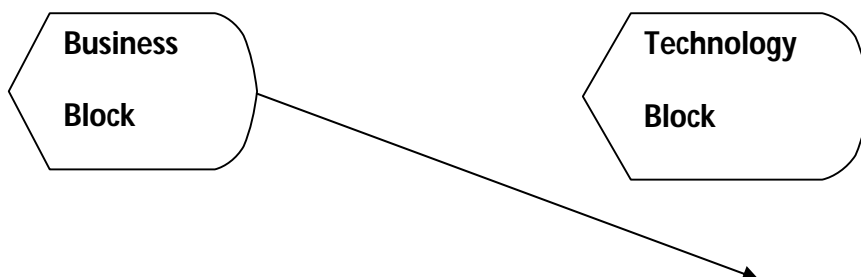
Reason as it has the maximum number of computers

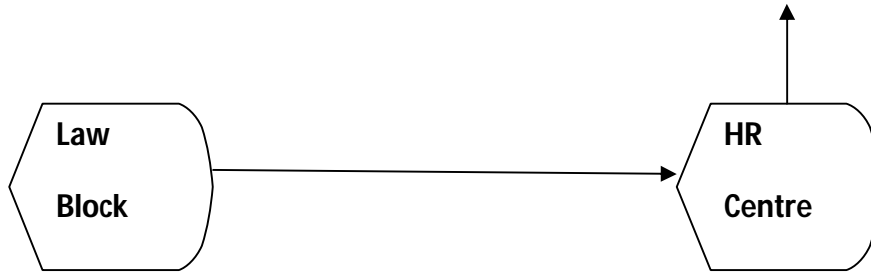
OR

Business Block

Reason as it is closest to all other Centers (minimum cable length required)

b) Suggest an ideal layout for connecting these blocks/centers for a wired connectivity.





c) Which device you will suggest to be placed/installed in each of these blocks/center to efficiently connect all the computers with in these blocks/center.

Ans Switch

d) The university is planning to connect its admission office in the closest big city, which is more than 250 km from university, which type of network out of LAN, MAN or WAN will be formed? Justify your answer.

Ans WAN as the given distance is more than the range of LAN and MAN.

Q25. Compare open source software and proprietary software.

Ans. Open source software refers to a program or software in which the source code (the form of the program when a programmer writes a program in a particular programming language) is available to the general public for use and/or modification from its original design free of charge.

Proprietary software is software that is owned by an individual or a company (usually the one that developed it). There are almost always major restrictions