COMPUTER SCIENCE (Theory) - Class XII
Marking Scheme
Sample Question Paper–I
Subject Code - 083

TIME : 3 Hrs **MM : 100**

1.

(a) Global Variable Local Variable 2

It is a variable which is declared outside all the functions in a function or with in a compound statement	It is a variable which is declared with the program compound statement in which it is declared
It is accessible throughout	It is accessible only within a function/

```
#include <iostream.h>
float NUM=900; //NUM is a global variable
void LOCAL(int T)
{
int Total=0; //Total is a local variable
for (int I=0;I<T;I++)
Total+=I;
cout<<NUM+Total;
}
void main()
{
LOCAL(45);
}
```

(1 Mark for two differences)
(1 Mark for the suitable example)
OR
(Full 2 Mark for explanation of differences with the help of an example)
OR
(1 Mark for only example with no explanation)

(b) (i) string.h (ii) stdio.h 1
(½ Mark for mentioning each correct header filename)

(c) #include <iostream.h> 2

```
class MEMBER
{
int Mno;float Fees;
public:
void Register(){cin>>Mno>>Fees;}
void Display(){cout<<Mno<<":"<<Fees<<endl;}
};
void main()
{
MEMBER M;
M.Register();
M.Display();
```

}
(½ Mark each correction)
(d) 111:60 3
112:70
113:85
(1 Mark for each correct line of output)
(e) #agaSbarr 2
(2 Marks for correct line of output)
(f) (i) ABBC 2
(2 Marks for mentioning correct option)
2.
(a) Data Encapsulation: Wrapping up of data and functions together in a single unit is 2
known as Data Encapsulation. In a class, we wrap up the data and functions together
in a single unit.
Data Hiding: Keeping the data in private visibility mode of the class to prevent it from
accidental change is known as Data Hiding.

```
class Computer
{
char CPU[10];int RAM;
public: Data Encapsulation
void STOCK();
void SHOW();
};
```

(½ Mark each for appropriate definitions)
(1 Mark for appropriate example showing both)
(b) i) Destructor, it is invoked as soon as the scope of the object gets over. 2
(½ Mark for mentioning destructor)
(½ Mark for remaining answer)
ii) Constructor Overloading (or Function Overloading or Polymorphism)

```
Seminar S1; //Function 1
Seminar S2(90); //Function 3
```

(½ Mark for mentioning the correct concept)
(½ Mark for the example)
(c)

```
class TEST 4
{
int TestCode;
char Description[20];
int NoCandidate,CenterReqd;
void CALCNTR();
public:
void SCHEDULE();
void DISPTEST();
};
```

```
void TEST::CALCNTR()
{
CenterReqd=NoCandidate/100 + 1;
}
void TEST::SCHEDULE()
{
cout<<"Test Code :";cin>>TestCode;
cout<<"Description :";gets(Description);
cout<<"Number :";cin>>NoCandidate;
CALCNTR();
}
void TEST::DISPTEST()
{
cout<<"Test Code :"<<TestCode<<endl;
cout<<"Description :"<<Description<<endl;
cout<<"Number :"<<NoCandidate<<endl;;
cout<<"Centres :"<<CenterReqd<<endl;;
}
```

(½ Mark for correct syntax for class header)
(½ Mark for correct declarations of data members)
(1 Mark for appropriate definition of function CALCNTR())
(1 Mark for appropriate definition of SCHEDULE() with a call for CALCNTR())
(1 Mark for appropriate definition of DISPTEST())

(d) (i) None of data members are accessible from objects belonging to class 4 AUTHOR.
(1 Mark for correct answer)

(ii) Haveit(), Giveit()
(1 Mark for correct answer)

(iii) Data members: Employees, Acode, Aname, Amount
Member function: Register(), Enter(), Display(), Haveit(), Giveit(), Start(), Show(),
(1 Mark for correct answer)

(iv) 70
(1 Mark for correct answer)

3. **(a)**

```
void AddNSave(int A[ ],int B[ ],int C[ ],int N,int M, int &K) 3
{
int I=0,J=0;
K=0;
while (I<N && J<M)
if (A[I]<B[J])
C[K++]=A[I++];
else
if (A[I]>B[J])
C[K++]=B[J++];
else
{
C[K++]=A[I++];
```

```
J++;
}
for (;I<N;I++)
C[K++]=A[I];
for (;J<M;J++)
C[K++]=B[J];
}
```
(½ Mark for correct Function Header)
(½ Mark for correct initialization of required variables)
(½ Mark for correct formation of loop)
(½ Mark for appropriate conditions and assignments in the loop)
(½ Mark for appropriately transferring the remaining elements from first array)
(½ Mark for appropriately transferring the remaining elements from second array)

(b) Given, 3
W=2
N=40
M=30
Base(S)=5000
Row Major Formula:
Loc(S[I][J]) =Base(S)+W*(M*I+J)
Loc(S[20][10]) =5000+2*(30*20+10)
=5000+2*(600+10)
=5000+1220
=6220
(1 Mark for writing correct formula (for column major) OR substituting formula with correct values)
(1 Mark for writing calculation step - at least one step)
(1 Mark for correct address)

(c)
```
struct NODE 4
{
char Name[20];
NODE *Link;
};
class QUEUE
{ NODE *R,*F;
public:
QUEUE();
void Insert();
void Delete();
};
void QUEUE::Insert()
{
NODE *Temp;
Temp=new NODE;
```

```
gets(Temp->Name);
Temp->Link=NULL;
if (Rear==NULL)
{
Rear=Temp;
Front=Temp;
}
else
{
Rear->Link=Temp;
Rear=Temp;
}
}
```
(1 Mark for creating a new node and assigning/entering appropriate values in it)
(1 Mark for checking if Queue is Empty)
(1 Mark for assigning Rear and Front as Temp - if Queue is Empty)
(1 Mark for eassigning Rear->Link as Front and Rear as Temp)

(d) void DiagSum(int M[][4],int N,int M) 2
```
{
int SumD1=0,SumD2=0;
for (int I=0;I<N;I++)
{
SumD1+=M[I][I];SumD2+=M[N-I-1][I];
}
cout<<"Sum of Diagonal 1:"<<SumD1<<endl;
cout<<"Sum of Diagonal 2:"<<SumD2<<endl;
}
```
(½ Mark for correct function header)
(½ Mark for initialization of SumD1 and SumD2 as 0)
(½ Mark for appropriate loop)
(½ Mark for correct expression for adding each diagonal elements)

(e) 2

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(½ Mark for correctly evaluating each operator)
(½ Mark for the correct result)

4. a) 1
```
File.seekg(RecNo*sizeof(Item)); //Statement 1
File.seekp(RecNo*sizeof(Item)); //Statement 2
```
(½ Mark for each correct Statement)

(b) 2
```
void CountLine()
{
ifstream FIL("STORY.TXT");
int LINES=0;
char STR[80];
while (FIL.getline(STR,80))
```

```
LINES++;
cout<<"No. of Lines:"<<LINES<<endl;
f.close();
}
```
(½ Mark for opening STORY.TXT correctly)
(½ Mark for initializing a counter variable as 0)
(½ Mark for correctly reading a line from the file)
(½ Mark for correctly incrementing the counter)

(c) void BookSearch() 3

```
{
fstream FIL;
FIL.open("BOOK.DAT",ios::binary|ios::in);
BOOK B;
int bn,Found=0;
cout<<"Enter Book No. to search…"; cin>>bn;
while (FIL.read((char*)&S,sizeof(S)))
if (FIL.RBno()==bn)
{
S.Display();
Found++;
}
if (Found==0) cout<<"Sorry! Book not found!!!"<<endl;
FIL.close();
}
```
(½ Mark for opening BOOK.DAT correctly)
(½ Mark for reading each record from BOOK.DAT)
(½ Mark for correct loop / checking end of file)
(1 Mark for comparing Book number)
(½ Mark for displaying the matching record)

5.

(a) Degree: Number of Columns in a table 2
Cardinality: Number of rows in a table
(1 Mark for each definition)

(b) (i) SELECT Acodes, ActivityName FROM ACTIVITY ORDER BY Acode DESC; 4
(1 Mark for correct query)
OR
(½ Mark for partially correct answer)

(ii) SELECT SUM(PrizeMoney), Stadium FROM ACTIVITY GROUP BY Stadium;
(1 Mark for correct query)
OR
(½ Mark for partially correct answer)

(iii) SELECT Name, Acode FROM COACH ORDER BY Acode;
(1 Mark for correct query)
OR
(½ Mark for partially correct answer)

(v) SELECT * FROM ACTIVITY WHERE SchduleDate<'01-Jan-2004'
ORDER BY ParticipantsNum;
1 Mark for correct query)
OR
(½ Mark for partially correct answer)
(c) 2
(i) 3
(½ Mark for correct output)
(ii) 19-Mar-2004 12-Dec-2003
(½ Mark for correct output)
(iii) Ravinder Discuss Throw
(½ Mark for correct output)
(iv) 1001
1003
1008
(½ Mark for correct output)
6. 2
(X+Y)' = X'.Y'
Verification
(X+Y)'.(X+Y) = X'.Y'.(X+Y)
0 = X'.Y'.X + X'.Y'.Y
0 = X'.X .Y'+ X'.0
0 = 0 .Y'+ 0
0 = 0 + 0
0 = 0
L.H.S = R.H.S
(1 Mark for stating any one of the Demorgan's Law)
(1 Mark for verifying the law)
(b) 2
F(P,Q)=(P'+Q).(P+Q')
(2 Marks for the final expression)
OR
(1 Mark for any one of the correct terms out of P'+Q or P+Q')
(c) F(U,V,W) = (U+V+W').(U+V'+W').(U'+V+W') 1
(1 Mark for the correct expression)
(d) 3
F(A,B,C,D)=A'C'+A'D'+B'D'
(½ Mark for placing all 1s at correct positions in K-Map)
(½ Mark for each grouping)
(1 Mark for writing final expression in reduced/minimal form)
Note: Deduct ½ mark if wrong variable names are used
7.
a) Appropriate comparison between any two out of Circuit Switching, Message 1 Switching, Packet Switching
(1 Mark for writing Appropriate comparison between any two switching technique)

b) (iii) ASP and (iv) PHP are not client side scripts 1
(1 Mark for correct answer)
c) The complaint has to be lodged with the Police under IT Act 1
(1 Mark for correct answer)
d) An Internet Protocol (IP) address is a numerical identification and logical address 1
that is assigned to devices connected in a computer network.
An IP Address is used to uniquely identify devices on the Internet and so one can quickly know the location of the system in the network.
(½ Mark for meaning of IP Address)
(½ Mark for mentioning the usefulness in network security)
e) e1) (Any of the following option) 4
Layout Option 1:
Layout Option 2: Since the distance between Block A and Block B is quite short
(1 Mark for showing any of the above suitable cable layout)
e2) The most suitable place / block to house the server of this organisation would be Block C, as this block contains the maximum number of computers, thus decreasing the cabling cost for most of the computers as well as increasing the efficiency of the maximum computers in the network.
(½ Mark for suggesting suitable place and ½ for appropriate reason)
e3) (i) For Layout 1, since the cabling distance between Blocks A and C, and that between B and C are quite large, so a repeater each, would ideally be needed along their path to avoid loss of signals during the course of data flow in these routes.
For layout 2, since the distance between Blocks A and C is large so a repeater would
ideally be placed in between this path
(½ Mark for suggesting suitable place for connecting repeater)
(ii) In both the layouts, a hub/switch each would be needed in all the blocks, to interconnect the group of cables from the different computers in each block
Layout 1
Layout 2
(½ Mark for suggesting suitable place for connecting hub)
e4) The most economic way to connect it with a reasonable high speed would be to use
radio wave transmission, as they are easy to install, can travel long distances, and
penetrate buildings easily, so they are widely used for communication, both indoors
and outdoors. Radio waves also have the advantage of being omni directional, which
is they can travel in all the directions from the source, so that the transmitter and receiver do not have to be carefully aligned physically.
(1 Mark for appropriate answer)
f) Spam mails, also known as junk e-mail, is a subset of spam that involves nearly 1

identical messages sent to numerous recipients by e-mail.
We can protect our mailbox from spams by creating appropriate filters.
(½ Mark for the definition of Spam Mails)
(½ Mark for the appropriate suggestion for protecting mailbox from it)
g) Open Source's proponents often claim that it offers significant benefits when com- 1
pared to typical Proprietary Software. Proprietary Software typically favour visible features (giving marketing advantage) over harder-to measure qualities such as stability,
security and similar less glamorous attributes.
Open Source Software developers are evidently motivated by many factors but favouring features over quality is not noticeable amongst them. For many developers,
peer review and acclaim is important, so it's likely that they will prefer to build software
that is admired by their peers. Highly prized factors are clean design, reliability and
maintainability, with adherence to standards and shared community values preeminent.
(1 Mark for appropriate answer)