

INTERNATIONAL INDIAN SCHOOL –DAMMAM  
PREBOARD EXAMINATIONS JAN-2015  
CLASS-XII COMPUTER SCIENCE (Subject Code 083)  
SET-1

Time allowed : 3 hours

Maximum Marks: 70

- Instructions: (i) All questions are compulsory.  
(ii) Programming Language: Section A C++.  
(iii) Programming Language : Section B Python.  
(iv) Answer either Section A or B, and Section C is compulsory.

**Section A (C++)**

- Q1. a. Differentiate between ordinary function and member functions in C++.  
Explain with an example. [2]
- b. Write the related library function name based upon the given information in C++.  
(i) Get single character using keyboard. This function is available in stdio.h file.  
(ii) To check whether given character is alpha numeric character or not. This function is available in ctype.h file. [1]
- c. Rewrite the following C++ program after removing all the syntactical errors (if any), underlining each correction. : [2]
- ```
#include<iostream.h>
define PI=3.14
void main()
{ float r;a;
cout<<'enter any radius';
cin>>r;
a=PI*pow(r,2);
cout<<"Area="<<a
}
```
- d. Write the output from the following C++ program code : [2]
- Find the output of the following program: 2
- ```
#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 ;
}
```
- e. Find the output of the following C++ program: [3]
- ```
#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) ;
}

```

(f) 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. [2]

```

#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

```

Q2

(a) Differentiate between public and private visibility modes in context of Object Oriented Programming using a suitable example illustrating each. [2]

b. Answer the questions (i) and (ii) after going through the following C++ class: [2]

```

class Stream
{
int StreamCode ; char Streamname[20];float fees;
public:
Stream() //Function 1
{ StreamCode=1; strcpy (Streamname,"DELHI"); fees=1000; }
void display(float C) //Function 2
{
cout<<StreamCode<<":"<<Streamname<<":"<<fees<<endl; }
~Stream() //Function 3
{
cout<<"End of Stream Object"<<endl; }
Stream (int SC,char S[ ],float F) ; //Function 4
};

```

i) In Object Oriented Programming, what are Function 1 and Function 4 combined together referred as? Write the definition of function 4.

ii) What is the difference between the following statements?

```

Stream S(11,"Science",8700);
Stream S=Stream(11,"Science",8700);

```

c. Define a class Travel in C++ with the description given below : [4]

```

Private Members :
T_Code of type string
No_of_Adults of type integer
No_of_Children of type integer

```

Distance of type integer

TotalFare of type float

Public Members :

- A constructor to assign initial values as follows :

T\_Code with the word "NULL"

No\_of\_Adults as 0

No\_of\_Children as 0

Distance as 0

TotalFare as 0

- A function AssignFare( ) which calculates and assigns the value of the data member TotalFare as follows :

For each Adult

**Fare (Rs) For Distance (Km)**

500            >=1000

300            <1000 & >=500

200            <500

For each Child the above Fare will be 50% of the Fare mentioned in the above table.

For example :

If Distance is 750, No\_of\_Adults = 3 and No\_of\_Children = 2

Then TotalFare should be calculated as

No\_of\_Adults \* 300 + No\_of\_Children \* 150

i.e. 3 \* 300 + 2 \* 150 = 1200

- A function EnterTraveK ) to input the values of the data members

T\_Code, No\_of\_Adults, No\_of\_Children and Distance; and

invoke the AssignFare( ) **function**.

- A function ShowTraveK) which displays the content of all the data members for a Travel.

(d) Answer the questions (i) to (iv) based on the following code :

[4]

```
class Teacher
{
char TNo[5], TName[20], DeptfIO];
int Workload;
protected:
float Salary;
void AssignSal(float);
public:
Teacher( );
void TEntry( );
void TDisplay( );
};
class Student
{
char Admno[10], SName[20], Stream[10];
protected:
int Attendance, TotMarks;
public:
Student( );
void SEntry( );
void SDisplay( );
};
class School : public Student, public Teacher
{
char SCode[10], SchName[20];
public:
School( );
void SchEntry( );
void SchDisplay( );
};
```

- (i) Which type of Inheritance is depicted by the above example?  
(ii) Identify the member function(s) that cannot be called directly from the objects of class School from the following :

TEntry()  
SDisplay()  
SchEntry()

- (iii) Write name of all the member(s) accessible from member functions of class School.  
(iv) If class School was derived privately from class Teacher and privately from class Student, then, name the member function(s) that could be accessed through Objects of class School.

Q3

a) An array Arr[50][100] is stored in the memory along the row with each element occupying 2 bytes. Find out the address of the location Arr[20][50], if the location Arr[10][25] is stored at the address 10000 [3]

b. Write a function in C++ which accepts an integer array and its size as arguments and replaces elements having even values with its half and elements having odd values with twice its value. [3]

Example : if an array of five elements initially contains the elements as 3, 4, 5, 16, 9

then the function should rearrange the content of the array as

6, 2, 10, 8, 18

(c) Write a function in C++ to delete a node containing customer's information, from a dynamically allocated Queue of Customers implemented with the help of the following structure : [4]

```
struct Customer
{
int CNo;
char CName[20];
Customer *Link;
};
```

(d) Write a function in C++ which accepts a 2D array of integers and its size as arguments and displays the elements of middle row and the elements of middle column. [2]

[Assuming the 2D Array to be a square matrix with odd dimension i.e. 3×3, 5×5, 7×7 etc...]

Example, if the array content is

3 5 4

7 6 9

2 1 8

Output through the function should be :

Middle Row : 7 6 9

Middle Column : 5 6 1

(e) Evaluate the following postfix notation of expression : [2]

15, 3, 2, +, /, 7, +, 2, \*

Q4.

a. Observe the program segment given below carefully, and answer the question that follows : [1]

```
class Labrecord
{int Expno;
char Experiment[20];char Checked;int Marks;
public ://function to enter Experiment details
void EnterExp( );
//function to display Experiment details
void ShowExp ( );
//function to return Expno
char RChecked ( ) {return Checked;}
//function to assign Marks
```

(A)

```

void Assignmarks(int M)
{ Marks = M;}
};
void MpdifyMarks()
{ fstream File;
File.open("Marks.Dat",ios::binary|ios::in|ios::out);
Labrecord L; int Rec = 0;
while (File.read((char*)&L, sizeof(L)))
{
if(L.RChecked() == ' N ' )
L.Assignmarks(0)
else
L.Assignmarks(10)
_____ //statement 1
_____ //statement 2
Rec ++ ;}
File.close ();}

```



If the function ModifyMarks() is supposed to modify Marks for the records in the file MARKS.DAT based on their status of the member Checked (containing value either V or 'N'). Write C++ statements for the **statement 1** and **statement 2**, where, **statement 1** is required to position the file write pointer to an appropriate place in the file and **statement 2** is to perform the write operation with the modified record.

b.

Write a function in C++ to print the count of the word **the** as an independent word in a textfile STORY.TXT.

[2]

For example, if the content of the file STORY.TXT is

There was a monkey in the zoo. The monkey was very naughty.

Then the output of the program should be 2.

c.

Given the binary file CAR.Dat, containing records of the following class CAR type: [3]

```

class CAR
{
int C_No;
char C_Name[20];
float Milage;
public:
void enter( ) {
cin>> C_No ; gets(C_Name) ; cin >> Milage;
}
void display( )
{
cout<< C_No ; cout<<C_Name ; cout<< Milage;
}
int RETURN_Milage( )
{
return Milage;
}
};

```

Write a function in C++, that would read contents from the file CAR.DAT and display the details of car with mileage between 100 to 150.

## Section B (Python)

Q1. a) How is a static method different from an instance method? [2]

b) Name the function / method required for [1]

i) Finding second occurrence of m in **madam**.

ii) get the position of an item in the list

c) Rewrite the following python code after removing all syntax error(s). Underline the corrections done. [2]

```
def main():
```

```
    r = raw_input("enter any radius : ")
```

```
    a = pi * math.pow(r,2)
```

```
    print "Area = " + a
```

d) Give the output of following with justification [2]

```
x = 3
```

```
x += x-x
```

```
print x
```

e) What will be printed, when following python code is executed [3]

```
class person:
```

```
    def __init__(self,id):
```

```
        self.id = id
```

```
arjun = person(150)
```

```
arjun.__dict__['age'] = 50
```

```
print arjun.age + len(arjun.__dict__)
```

Justify your answer.

f) What are the possible outcome(s) expected from the following python code? Also specify maximum and minimum value, which we can have. [2]

```
def main():
```

```
    p = 'MY PROGRAM'
```

```
    i = 0
```

```
    while p[i] != 'R':
```

```
        l = random.randint(0,3) + 5
```

```
        print p[i],l,
```

```
        i += 1
```

i) R - P - O - R -

ii) P - O - R - Y -

iii) O - R - A - G -

iv) A - G - R - M -

Q2. a) How data encapsulation and data abstraction are implemented in python, explain with example. [2]

b) What will following python code produce, justify your answer [2]

```
x = 5
```

```
y = 0
```

```
print 'A'
```

```
try :
```

```
    print 'B'
```

```
    a = x / y
```

```
    print 'C'
```

```
except ZerorDivisionError:
```

```
    print 'F'
```

```
except :
```

```
    print 'D'
```

c) Write a class customer in python having following specifications [4]

Instance attributes:

customernumber - numeric value

customername - string value

price, qty, discount, totalprice, netprice - numeric value

methods :

**init()** to assign initial values of customernumber as 111, customername as "Leena", qty as 0 and price, discount & netprice as 0.

**caldiscount()** - To calculate discount, totalprice and netprice

totalprice = price \* qty

discount is 25% of totalprice, if totalprice >=50000

discount 15% of totalprice, if totalprice >=25000 and totalprice <50000

discount 10% of totalprice, if totalprice <25000 netprice= totalprice - discount

**input()** - to read data members customername, customernumber, price, qty and call caldiscount() to calculate discount, totalprice and netprice.

**show()** - to display Customer details.

d) What are the different ways of overriding function call in derived class of python? Illustrate with example. [2]

e) Write a python function to find sum of square-root of elements of a list. List is received as argument, and function returns the sum. Ensure that your function is able to handle various situations viz. list containing numbers & strings, module required is imported etc. [2]

Q3. a) What will be the status of following list after third pass of bubble sort and third pass of selection sort used for arranging elements in ascending order?

40, 67, -23, 11, 27, 38, -1 [3]

b) Write a python function to search for a value in the given list using binary search method. Function should receive the list and value to be searched as argument and return 1 if the value is found 0 otherwise. [2]

c) Define stack class in python to operate on stack of numbers. [4]

d) Write a python function using yield statement to generate prime numbers till the value provided as parameter to it. [3]

e) Evaluate the following postfix expression. Show the status of stack after execution of each operation separately:

2,13, +, \*, 5, -,6,3,/,5,\*,< [2]

Q4. a) How is method write() different from writelines() in python? [1]

b) Given a pickled file - **log.dat**, containing list of strings. Write a python function that reads the file and looks for a line of the form

*Xerror: 0.2395*

whenever such line is encountered, extract the floating point value and compute the total of these error values. When you reach end of file print total

number of such error lines and average of error value. [3]

c) Given a text file **car.txt** containing following information of cars

carNo, carname, milage. Write a python function to display details of all those cars whose milage is from 100 to 150. [2]

Section C

Q5.

- a. What is relational data base? What is the purpose of the primary key? [2]  
 b. Consider the following tables. Write SQL commands for the statements (i) to (iv) and write output for (v) to (viii) [6]

DEPT

| Deptno | Deptname   | Loc      |
|--------|------------|----------|
| 10     | Accounting | New York |
| 20     | Research   | Dallas   |
| 30     | Sales      | Chicago  |
| 40     | Operations | Boston   |

EMP

| Empno | Ename  | Job       | Mgr  | Hiredate  | Sal  | Comm. | Deptno |
|-------|--------|-----------|------|-----------|------|-------|--------|
| 7839  | King   | President |      | 17-nov-81 | 5000 |       | 10     |
| 7698  | Blake  | Manager   | 7839 | 01-may-81 | 2850 |       | 30     |
| 7782  | Clark  | Manager   | 7839 | 09-jun-81 | 2450 |       | 10     |
| 7566  | Jones  | Manager   | 7839 | 02-apr-81 | 2975 |       | 20     |
| 7654  | Martin | salesman  | 7698 | 28-sep-81 | 1250 | 1400  | 30     |
| 7499  | Allen  | Salesman  | 7698 | 20-feb-81 | 1600 | 300   | 30     |
| 7844  | Turner | Salesman  | 7698 | 08-sep-81 | 1500 | 0     | 30     |
| 7900  | James  | Clerk     | 7698 | 03-dec-81 | 950  |       | 30     |
| 7521  | Ward   | Salesman  | 7698 | 22-feb-81 | 1250 | 500   | 30     |
| 7902  | Ford   | Analyst   | 7566 | 03-dec-81 | 3000 |       | 20     |
| 7369  | Smith  | Clerk     | 7902 | 17-dec-80 | 800  |       | 20     |
| 7788  | Scott  | Analyst   | 7566 | 09-dec-82 | 3000 |       | 20     |
| 7876  | Adams  | Clerk     | 7788 | 12-jan-83 | 1100 |       | 20     |
| 7934  | Miller | Clerk     | 7782 | 23-jan-82 | 1300 |       | 10     |

- i. To display the name, job, department number and department name for all employees who work in Dallas
- ii. Display employee name and salary of all employees who report to King
- iii. To display whole table in alphabetical order of name
- iv. To increase salary of all manager by 25 and commission by 12%
- v. SELECT JOB, SUM(SAL), COUNT(\*) FROM EMP GROUP BY JOB;
- vi. SELECT AVG(COMM) FROM EMP ;
- vii. SELECT ENAME, SAL, SAL \*12 FROM EMP where COMM IS NOT NULL.
- viii. SELECT \* FROM EMP WHERE COMM >=0 AND SAL <= 1400;

6. a. State De Morgan's law and verify one of the laws algebraically. 2
- b. Draw logic circuit for  $X' + Y'Z$  using NOR gates. 2
- c. Express  $P + Q'R$  in canonical SOP form 1
- d. Simplify the following using K-map 3

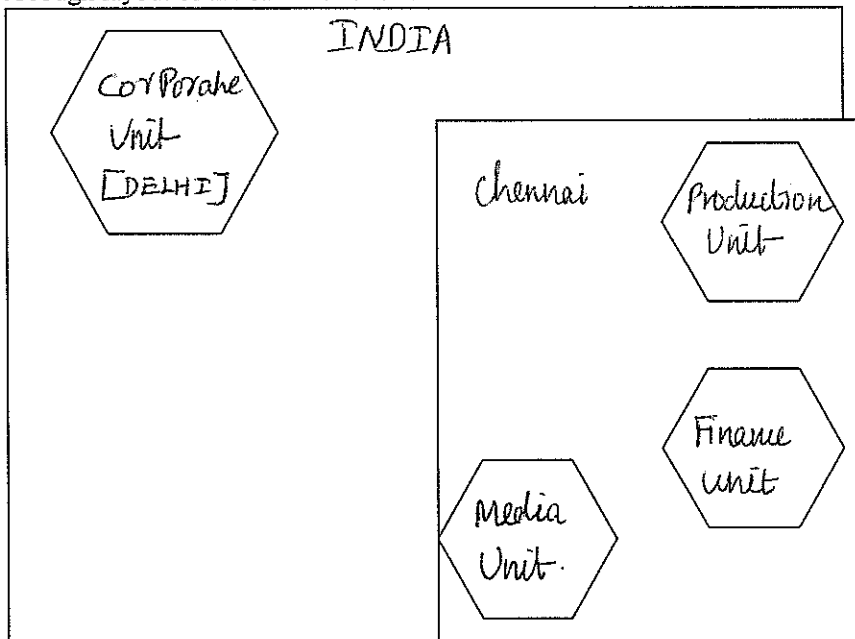
$$F(ABCD) = \sum (0,1,2,4,6,8,9, 10,12,14)$$

7.

- a. Differentiate packet switching and circuit switching. [1]
- b. When do you prefer XML over HTML and why? [1]
- c. What is the importance of URL in networking? [1]
- d. What is web 2.0? [1]
- e. Compare freeware and shareware [1]
- f. How Trojan horses are different from worms? Mention any one difference. [1]

g. "China Middleton Fashion" is planning to expand their network in India, starting with two cities in India to provide infrastructure for distribution of their product. The company has planned to set up their main office units in Chennai at three different locations and have named their offices as "Production Unit", "Finance Unit" and "Media Unit". The company has its corporate unit in Delhi.

A rough layout of the same is as follows:



Approximate distances between these Units is as follows:

| FROM            | TO             | DISTANCE |
|-----------------|----------------|----------|
| Production unit | Finance unit   | 70 mtr   |
| Production unit | Media unit     | 15km     |
| Production unit | Corporate unit | 2112km   |
| Finance unit    | Media unit     | 15km     |

In continuation of the above, the company experts have planned to install the following number of computers in each of their office units:

|                 |     |
|-----------------|-----|
| Production unit | 150 |
| Finance unit    | 35  |
| Media unit      | 10  |
| Corporate unit  | 30  |

(i) Suggest the kind of network required (out of LAN, MAN, WAN) for connecting each of the following office units: [1]

- production Unit and Media Unit
- Production Unit and Finance Unit

(ii) Which one of the following devices will you suggest for connecting all the computers within each of their office units? [1]

- Switch/Hub
- Modem
- Telephone

(iii) Which of the following communication media, will you suggest to be procured by the company for connecting their local office units in Chennai for very effective (High Speed) communication? [1]

- a. Telephone Cable    b. Optical Fiber    c. Ethernet Cable

(iv) Suggest a cable/wiring layout for connecting the company's local office units located in Chennai. Also, suggest an effective method/technology for connecting the company's office unit located in Delhi. [1]



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SET-2

Time allowed : 3 hours

Maximum Marks: 70

Instructions: (i) All questions are compulsory.

(ii) Programming Language: Section A C++.

(iii) Programming Language : Section B Python.

(iv) Answer either Section A or B, and Section C is compulsory.

**Section A (C++)**

Q1. a. Differentiate between #define and const . Explain with an example. [2]

b. Write the related library function name based upon the given information in C++.

(i) Get single character using keyboard. This function is available in stdio.h file.

(ii) To check whether given character is alphabetic character or not. This function is available in ctype.h file. [1]

c. Rewrite the following C++ program after removing all the syntactical errors (if any), underlining each correction. : [2]

```
include<iostream.h>
#define PI=3.14
void main( )
{ float r;a;
cout<<'enter any radius';
cin>>r;
a=PI*pow(r,2);
cout<<"Area="<<a
}
```

d. Write the output from the following C++ program code: [2]

```
#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;}
e. Find the output of the following C++ program: [3]
```

```
#include<iostream.h>
void SwitchOver(int A [ ], int N, int Split)
{
for (int K=0 ; K<N; K++)
if (K<Split)
A[K]+ =K;
else
A [K]*=K;
}
void Display (int A [ ], int N)
{
for (int K=0 ; K<N ; K++)
(K%2==0)? cout<<A[K]<<"%":cout<<A(K)<<endl;
```

```

}
void main ( )
{
int H[ ]= {30,40,50,20,10,5};
SwitchOver (H, 6, 3);
Display (H, 6);
}

```

(f) 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. [2]

```

#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<<"#" ;
317
}

```

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

(ii) 52 # 53 # 54 # 55

(iii) 53 # 54 #

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

Q2

(a) Differentiate between protected and private visibility modes in context of Object Oriented Programming using a suitable example illustrating each. [2]

b. Answer the questions (i) and (ii) after going through the following C++ class: [2]

```

class Stream
{
int StreamCode ; char Streamname[20];float fees;
public:
Stream( ) //Function 1
{ StreamCode=1; strcpy (Streamname,"DELHI"); fees=1000; }
void display(float C) //Function 2
{
cout<<StreamCode<<":"<<Streamname<<":"<<fees<<endl; }
~Stream( ) //Function 3
{
cout<<"End of Stream Object"<<endl; }
Stream (int SC,char S[ ],float F) ; //Function 4
};

```

i) In Object Oriented Programming, what are Function 1 and Function 4 combined together referred as? Write the definition of function 4.

ii) What is the difference between the following statements?

```
Stream S(11,"Science",8700);
```

```
Stream S=Stream(11,"Science",8700);
```

c. Define a class Travel in C++ with the description given below : [4]

Private Members :

T\_Code of type string

No\_of\_Adults of type integer

No\_of\_Children of type integer

Distance of type integer

TotalFare of type float

Public Members :

- A constructor to assign initial values as follows :

T\_Code with the word "NULL"

No\_of\_Adults as 0

No\_of\_Children as 0

Distance as 0

TotalFare as 0

- A function AssignFare( ) which calculates and assigns the value of the data member TotalFare as follows :

For **each** Adult

**Fare (Rs) For Distance (Km)**

500            >=1000

300            <1000 & >=500

200            <500

For **each** Child the above Fare will be 50% of the Fare mentioned in the above table.

For example :

If Distance is 750, No\_of\_Adults = 3 and No\_of\_Children = 2

Then TotalFare should be calculated as

No\_of\_Adults \* 300 + No\_of\_Children \* 150

i.e. 3 \* 300 + 2 \* 150 = 1200

- A function EnterTraveK ) to input the values of the data members T\_Code, No\_of\_Adults, No\_of\_Children and Distance; and invoke the AssignFare( ) **function**.
- A function ShowTraveK) which displays the content of all the data members for a Travel.

(d) Answer the questions (i) to (iv) based on the following code :

[4]

```
class Teacher
{
char TNo[5], TName[20], DeptfIO];
int Workload;
protected:
float Salary;
void AssignSal(float);
public:
Teacher( );
void TEntry( );
void TDisplay( );
};
class Student
{
char Admno[10], SName[20], Stream[10];
protected:
int Attendance, TotMarks;
public:
Student( );
void SEntry( );
void SDisplay( );
};
class School : public Student, public Teacher
};
char SCode[10], SchName[20];
public:
School( );
void SchEntry( );
void SchDisplay( );
};
```

(i) Which type of Inheritance is depicted by the above example?

(ii) Identify the member function(s) that can be called directly from the

objects of class School from the following :

TEntry()

SDisplay()

SchEntry()

(iii) Write name of all the member(s) accessible from member functions of class School.

(iv) If class School was derived privately from class Teacher and privately from class Student, then, name the member function(s) that could be accessed through Objects of class School.

Q3

a) An array Array[20][15] is stored in the memory along the column with each element occupying 8 bytes. Find out the Base Address and address of the element Array[2][3] if the element Array [4] [5] is stored at the address 1000. [ 3]

b. Write a function in C++ which accepts an integer array and its size as arguments and replaces elements having even values with its twice and elements having odd values with twice its value. [4]

Example : if an array of five elements initially contains the elements as

3, 4, 5, 16, 9

then the function should rearrange the content of the array as

6, 8, 10, 32, 18

(c) Write a function in C++ to delete a node containing customer's information, from a dynamically allocated Queue of Customers implemented with the help of the following structure : [4]

```
struct Customer
```

```
{
int CNo;
char CName[20];
Customer *Link;
};
```

(d) Write a function in C++ which accepts a 2D array of integers and its size as arguments and displays the elements of middle row and the elements of middle column. [2]

[Assuming the 2D Array to be a square matrix with odd dimension  
i.e. 3×3, 5×5, 7×7 etc...]

Example, if the array content is

3 5 4

7 6 9

2 1 8

Output through the function should be :

Middle Row : 7 6 9

Middle Column : 5 6 1

(e) Evaluate the following postfix notation of expression : [2]

150 ,3, 2, + ,/, 7, +, 2, \*

Q4.

a. Observe the program segment given below carefully, and answer the question that follows : [ 1]

```
class Labrecord
{int Expno;
char Experiment[20];char Checked;int Marks;
public ://function to enter Experiment details
void EnterExp( );
//function to display Experiment details
void ShowExp ( );
//function to return Expno
char RChecked ( ) {return Checked;}
//function to assign Marks
void Assignmarks(int M)
{ Marks = M;}
};
```

(4)

```

void MpdifyMarks()
{ fstream File;
File.open("Marks.Dat",ios::binary|ios::in|ios::out);
Labrecord L; int Rec = 0;
while (File.read((char*)&L, sizeof(L)))
{
if(L.RChecked() == 'N')
L.Assignmarks(0)
else
L.Assignmarks(10)
_____ //statement 1
_____ //statement 2
Rec ++ ;}
File.close ();}

```

If the function ModifyMarks() is supposed to modify Marks for the records in the file MARKS.DAT based on their status of the member Checked (containing value either V or 'N'). Write C++ statements for the **statement 1** and **statement 2**, where, **statement 1** is required to position the file write pointer to an appropriate place in the file and **statement 2** is to perform the write operation with the modified record.

b.

Write a function in C++ to print the count of the word **the** as an independent word in a textfile STORY.TXT. [2]

For example, if the content of the file STORY.TXT is  
There was a monkey in the zoo. The monkey was very naughty.  
Then the output of the program should be 2.

c.

Given the binary file CAR.Dat, containing records of the following class CAR type: [3]

```

class CAR
{
int C_No;
char C_Name[20];
float Milage;
public:
void enter() {
cin >> C_No ; gets(C_Name) ; cin >> Milage;
}
void display()
{
cout << C_No ; cout << C_Name ; cout << Milage;
}
int RETURN_Milage()
{
return Milage;
}
};

```

Write a function in C++, that would read contents from the file CAR.DAT and display the details of car with mileage between 1001 to 1501.

## Section B (Python)

Q1.a) How is a static method different from an instance method? [2]

b) Name the function / method required for [1]

i) Finding second occurrence of m in **madam**.

ii) get the position of an item in the list

c) Rewrite the following python code after removing all syntax error(s). Underline the corrections done. [2]

```
def main():  
    r = raw-input("enter any radius : ")  
    a = pi * math.pow(r,2)  
    print " Area = " + a
```

d) Give the output of following with justification [2]

```
x = 3  
x += x - x  
print x
```

e) What will be printed, when following python code is executed [3]

```
class person:  
    def __init__(self,id):  
        self.id = id  
arjun = person(150)  
arjun.__dict__['age'] = 50  
print arjun.age + len(arjun.__dict__)
```

Justify your answer.

f) What are the possible outcome(s) expected from the following python code? Also specify maximum and minimum value, which we can have. [2]

```
def main():  
    p = 'MY PROGRAM'  
    i = 0  
    while p[i] != 'R':  
        l = random.randint(0,3) + 5  
        print p[i], '-'  
        i += 1
```

i) R - P - O - R -

ii) P - O - R - Y -

iii) O - R - A - G -

iv) A - G - R - M -

Q2. a) How data encapsulation and data abstraction are implemented in python, explain with example. [2]

b) What will following python code produce, justify your answer [2]

```
x = 5  
y = 0  
print 'A'  
try :  
    print 'B'  
    a = x / y  
    print 'C'  
except ZerorDivisionError:  
    print 'F'  
except :  
    print 'D'
```

c) Write a class customer in python having following specifications [4]

Instance attributes:

customernumber - numeric value

customername - string value

price, qty, discount, totalprice, netprice - numeric value

methods :

**init()** to assign initial values of customernumber as 111, customername as "Leena", qty as 0 and price, discount & netprice as 0.

**calcdiscout()** - To calculate discount, totalprice and netprice

totalprice = price \* qty

discount is 25% of totalprice, if totalprice >=50000

discount 15% of totalprice, if totalprice >=25000 and totalprice <50000

discount 10% of totalprice, if totalprice <250000 netprice= totalprice - discount

**input()** -- to read data members customername, customernumbar, price, qty and call calcdiscout() to calculate discount, totalprice and netprice.

**show()** - to display Customer details.

d) What are the different ways of overriding function call in derived class of python ? Illustrate with example. [2]

e) Write a python function to find sum of square-root of elements of a list. List is received as argument, and function returns the sum. Ensure that your function is able to handle various situations viz. list containing numbers & strings, module required is imported etc. [2]

Q3. a) What will be the status of following list after third pass of bubble sort and third pass of selection sort used for arranging elements in ascending order?

40, 67, -23, 11, 27, 38, -1 [3]

b) Write a python function to search for a value in the given list using binary search method. Function should receive the list and value to be searched as argument and return 1 if the value is found 0 otherwise. [2]

c) Define stack class in python to operate on stack of numbers. [4]

d) Write a python function using yield statement to generate prime numbers till the value provided as parameter to it. [3]

e) Evaluate the following postfix expression. Show the status of stack after execution of each operation separately:

2,13, +, \*, 5, -,6,3,/,5, \*, < [2]

Q4.a) How is method write() different from writelines() in python? [1]

b) Given a pickled file - log.dat, containing list of strings. Write a python function that reads the file and looks for a line of the form

*Error: 0.2395*

whenever such line is encountered, extract the floating point value and compute the total of these error values. When you reach end of file print total number of such error lines and average of error value. [3]

c) Given a text file car.txt containing following information of cars

carNo, carname, milage. Write a python function to display details of all those cars whose milage is from 100 to 150. [2]

Section C

Q5.

- a. What is relational data base? What is the purpose of the primary key? 2  
 b. Consider the following tables. Write SQL commands for the statements (i) to (iv) and write output for (v) to (viii) [6]

DEPT

| Deptno | Deptname   | Loc      |
|--------|------------|----------|
| 10     | Accounting | New York |
| 20     | Research   | Dallas   |
| 30     | Sales      | Chicago  |
| 40     | Operations | Boston   |

EMP

| Empno | Ename  | Job       | Mgr  | Hiredate  | Sal  | Comm. | Deptno |
|-------|--------|-----------|------|-----------|------|-------|--------|
| 7839  | King   | President |      | 17-nov-81 | 5000 |       | 10     |
| 7698  | Blake  | Manager   | 7839 | 01-may-81 | 2850 |       | 30     |
| 7782  | Clark  | Manager   | 7839 | 09-jun-81 | 2450 |       | 10     |
| 7566  | Jones  | Manager   | 7839 | 02-apr-81 | 2975 |       | 20     |
| 7654  | Martin | salesman  | 7698 | 28-sep-81 | 1250 | 1400  | 30     |
| 7499  | Allen  | Salesman  | 7698 | 20-feb-81 | 1600 | 300   | 30     |
| 7844  | Turner | Salesman  | 7698 | 08-sep-81 | 1500 | 0     | 30     |
| 7900  | James  | Clerk     | 7698 | 03-dec-81 | 950  |       | 30     |
| 7521  | Ward   | Salesman  | 7698 | 22-feb-81 | 1250 | 500   | 30     |
| 7902  | Ford   | Analyst   | 7566 | 03-dec-81 | 3000 |       | 20     |
| 7369  | Smith  | Clerk     | 7902 | 17-dec-80 | 800  |       | 20     |
| 7788  | Scott  | Analyst   | 7566 | 09-dec-82 | 3000 |       | 20     |
| 7876  | Adams  | Clerk     | 7788 | 12-jan-83 | 1100 |       | 20     |
| 7934  | Miller | Clerk     | 7782 | 23-jan-82 | 1300 |       | 10     |

- i. To display the name, job, department number and department name for all employees who work in Dallas
- ii. Display employee name and salary of all employees who report to King
- iii. To display whole table in alphabetical order of name
- iv. To increase salary of all manager by 25 and commission by 12%
- v. SELECT JOB, SUM(SAL), COUNT(\*) FROM EMP GROUP BY JOB;
- vi. SELECT AVG(COMM) FROM EMP ;
- vii. SELECT ENAME, SAL, SAL \*12 FROM EMP where COMM IS NOT NULL.
- viii. SELECT \* FROM EMP WHERE COMM >=0 AND SAL <= 1400;

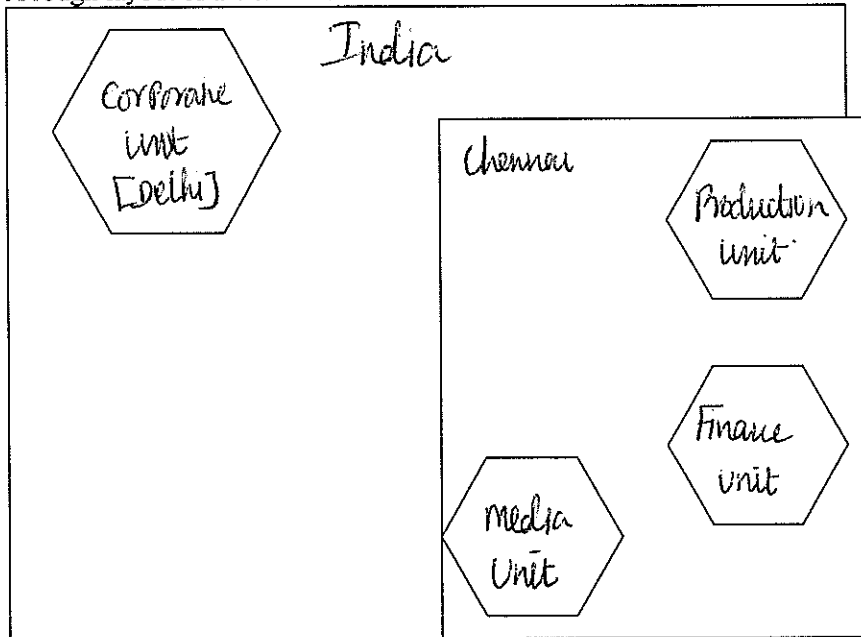
6. a. State De Morgan's law and verify one of the law algebraically. 2
- b. Draw logic circuit for  $X' + Y'Z$  using NAND gates. 2
- c. Express  $P + Q'R$  in canonical SOP form 1
- d. Simplify the following using K-map 3

$$F(ABCD) = \sum (0,1,2,4,6,8,9, 10,12,14)$$

7.
  - a. Differentiate packet switching and circuit switching. 1
  - b. When do you prefer XML over HTML and why? 1
  - c. What is the importance of URL in networking? 1
  - d. What is web 2.0? 1
  - e. Compare freeware and shareware 1
  - f. How Trojan horses are different from worms? Mention any one difference. 1

g. "China Middleton Fashion" is planning to expand their network in India, starting with two cities in India to provide infrastructure for distribution of their product. The company has planned to set up their main office units in Chennai at three different locations and have named their offices as "Production Unit", "Finance Unit" and "Media Unit". The company has its corporate unit in Delhi.

A rough layout of the same is as follows:



Approximate distances between these Units is as follows:

| FROM            | TO             | DISTANCE |
|-----------------|----------------|----------|
| Production unit | Finance unit   | 70 mtr   |
| Production unit | Media unit     | 15km     |
| Production unit | Corporate unit | 2112km   |
| Finance unit    | Media unit     | 15km     |

In continuation of the above, the company experts have planned to install the following number of computers in each of their office units:

|                 |     |
|-----------------|-----|
| Production unit | 150 |
| Finance unit    | 35  |
| Media unit      | 10  |
| Corporate unit  | 30  |

(i) Suggest the kind of network required (out of LAN, MAN, WAN) for connecting each of the following office units: 1

- production Unit and Media Unit
- Production Unit and Finance Unit

(ii) Which one of the following devices will you suggest for connecting all the computers within each of their office units? 1

- Switch/Hub
- Modem
- Telephone

(iii) Which of the following communication media, will you suggest to be procured by the company for connecting their local office units in Chennai for very effective (High Speed) communication? 1

- a. Telephone Cable    b. Optical Fiber    c. Ethernet Cable

(iv) Suggest a cable/wiring layout for connecting the company's local office units located in Chennai. Also, suggest an effective method/technology for connecting the company's office unit located in Delhi. 1