

[1] Show the output display of the following programs:

```
a) class Adder { private : int y[10],n,index, total ;
    public :
    Adder (int i = 0) { total = i; n=0;index=0;}
    void addNum ( ) { for(int i=0;i<n;i++)total += y[i]; }
    int getTotal ( ) { return total; }
    void put(int b){ y[index]=b;n++; index++; }
    int max(){int x=y[0];for(int i=0;i<n;i++) if(y[i]>x)
        x=y[i]; return x; };

    int main ( )
    { Adder a;
      a.put(10); a.put(20);a.put(5);a.put(30);a.put(15);
      a . addNum ( );
      cout << "Total : "<<a.getTotal ( )<< endl;
      cout<<" Maximum " <<a.max(); return 0 ; }
```

Total: 80  
Maximum 30

```
b) class testClass
{ int Cno,total; char section;
public:
testClass(int n=1 )
{ Cno=n; section='A'; total=30; }
void admission (int c=20)
{section++; total+=c; }
void ClassShow ( )
{cout<<Cno<<": "<<section<<": "<<total<<endl; };
```

---

```
main ( )
{testClass C1(5) ,C2;
C1.admission(25); C1.ClassShow( );
C2.admission( ) ; C1.admission(30);
C2.ClassShow( ) ; C1.ClassShow( ) ; }
```

5 : B : 55  
1 : C : 50  
5 : C : 85

```
c) class array { int a[10];
    public: int length;
    — int get(int index) {return a[index]; }
    — void set(int index, int val) { a[index] = val; length++; } } ;
```

```
main( )
{ array L1,L2; cout<<" creat new arrays "<<endl;
  L1.length=0; L2.length=0;
  L1. set(0,1); L1.set(1,1); L1.set(2,4); L1.set(3,20);
  L2.set(0,10); L2.set(1,30); L2.set(2,50);
cout<<" length of array 1 " <<L1.length<<endl;
cout<<" length of array 2 " <<L2.length<<endl;
  cout<< L1.get(2)<<" " <<L1.get(3)<<endl;
  cout<<L2.get(0)<<" " <<L2.get(2)<<endl; }
```

create new arrays  
.....4  
..... 3  
4      20  
10     50

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

```
class Travel
{ int PlaceCode; char Place [20] ;
float Charges;
public :
Travel () //Function 1
{PlaceCode = 1; strcpy (Place, "Cairo"); Charges =100; }
void TravelPlan (float C)
//Function 2
{cout<<PlaceCode<< ":" <<Place<< ":" <<Charges<<endl; }
- Travel () //Function 3
{cout<<"Travel Plan Cancelled"<<endl; }
Travel (int PC, char P [], float C)
// Function 4
{PlaceCode = PC; strcpy (Place, P);
Charges = C; } };
```

هاام

class can have multi  
constructor differ  
according to  
parameters

(i) In Object Oriented Programming, what are Function 1 and Function 4  
combinely referred to as ? constructor of the class

(ii) In Object Oriented Programming which concept is illustrated by Function 3?

When is this function called/invoked ? destructor -> clean up the space of the object

[3] Rewrite the following program after removing the syntax errors (if any).  
Under line each correction.

#include <iostream.h>

Class Item

{ long k1, k2;

public :

void Purchase {cin>>k1>> k2;}

int add ( return k1+k2;)

void sale () { cout<<" value 1 : "<< k1<<" value 2 : "<<k2<<endl; };

void main ()

{ Item I1, I2;

Purchase ();

cout<<I1.k1<<I1.k2<<endl;

cout<<I2.k1<<I2.k2<<endl;

I1. Sale () ; I2. Sale ()

cout<<" new "<<<add( ); }

sale();

int add() {return k1+k2;}

I1.purchase(); I2.purchase();

error cant print priate data

I1.add();

[4] Show the output display of the following program and conclude your answer:

class state

{ private: string state\_name; int size;

public: state() { size = 0; state\_name = " any string "};

void get() { cin>>state\_name ; size = state\_name.length(); }

void display()

{ cout<<" string "<<state\_name<<" with size "<<size<<endl; }

```
void Replace(state &a, state &b)
```

```
{ string s= b.state_name;
  b.state_name=a.state_name;
  a.state_name +=s;
  size = a.size + b.size; } };
```

assume input is

omar

ahmed

```
main()
```

```
{ state S1, S2, S3;
```

```
S1.get();S2.get();
```

```
S1.Replace(S1, S3);S1.display();
```

omar 4

```
S2.Replace(S2,S1); S2.display(); }
```

ahemdomar 9

[5] Construct the class person that contains:

**Name as string, age as integer, salary as float, and the two functions:**

Void enter( ) to read data of any person

Void report( ) to print the information of any person

Then write a main program that use class to construct the data base of 10 persons and print the information of any required one.

Write a recursive function that obtains the sum of first n elements of an array of integers.

[6] Create a base class basic\_info with data members name ,roll no, sex, height and weight and two member functions getdata( ) and display( ).

Creat an array of objects of the class , enter data and display all the information using object of derived class.

[7] Construct the class **Vector**, that represents a one dimensional array **A** of maxsize **N** that contains integer elements. The class includes the following member functions:

i) **void insert\_value(int value)** : that insert **value** at the end of the array and modify the size of the array.

ii) **void print (int i)** : to print the element at the index i.

iii) **void add(Vector B)** :to add array B to the array A.

Then write a main program that declares two objects of the class **Vector** A, B, inserts 10 values in each array, adds the two arrays, then search for certain element in the array A and delete it with required modification of the array. Print the elements of array A. Write all the member functions of the class.