

1. a) Differentiate between an identifier and keywords. (2)
- b) Name the header files, to which following inbuilt function belong to: (1)
- a) abs() b) open()

- c) Identify the errors in the following program code: (2)

```
#include<iostream.h>
class int
{ int I,j; public:
  int(int a, int b)
  {
    I=a; j=b;
  }
};
class class2
{
  int I,j; public:
  class2(int a, int b)
  {
    I=a; j=b;
  }
};
int main()
{
  int x(10,20) ; class2
  y ; x=y ;
}
```

- d) Give the output of the following program: (2)

```
#include<iostream.h>
int global=10;
void func(int &x, int y)
{
  x=x-y ;y=x*10 ; cout<<x<<','<<y <<"\n" ;
}

void main()
{
  int global=7 ;
  func( ::global,global) ; cout<<global<<','<<::global<<"\n";
  func(global,::global) ; cout<<global<<','<<::global<<"\n";
}
```

- e) Find the output of the following program : (3)

```
#include<iostream.h>
#include<string.h>
#include<ctype.h>
void Change(char Msg[], int Len)
{
    for(int Count=0;Count<Len;Count++)
    {
        if(islower(Msg[Count])) Msg[Count]=toupper(Msg[Count]);
        else if(isupper(Msg[Count])) Msg[Count]=tolower(Msg[Count]);
        else if(isdigit(Msg[Count]))
            Msg[Count]=Msg[Count]+1;
        else Msg[Count]='*';
    }
}
void main()
{
    char Message[]="2015 Happy New Year";
    int Size=strlen(Message);
    Change(Message,Size);
    cout<<Message<<endl;
    for(int C=0,R=Size-1;C<=Size/2;C++,R--)
    {
        char Temp=Message[C]; Message[C]=Message[R];
        Message[R]=Temp;
    }
    cout<<Message<<endl;
}
```

- f) Study the following program and select the possible output from it.. Also justify your answer. (2)

```
#include<iostream.h>
#include<stdlib.h>
const int Max=3;
void main()
{
    randomize( ); int Div;
    Div=1+random(Max);
    for(int N=1;N<5;N++)
    {
        cout<<100%Div<<"#";
    }
}
i) 0#0#0#0#   ii)1#1#1#1#   iii)2#2#2#2#   iv)3#3#3#3#
```

2. a) What is Function Overloading? Give an example in C++ to illustrate the same. (2)
- b) Answer the questions (i) and (ii) after going through the following program: (2)

```
#include<iostream.h>
#include<string.h>
class AirIndia
{
    char flno; int Nop;
public:
    AirIndia() //function1
    {
        strcpy(flno, " "); Nop=0;
    }
    AirIndia( char *str,int n) //function2
    {
        strcpy(flno,str); Nop=n;
    }
    void input //function3
    {
        cin>>flno; cin>>Nop;
    }
    ~AirIndia() //function4
    {
        cout<<"counter closed"<<endl;
    }
};
```

- (i) In Object Oriented Programming, which concept is illustrated by Function1 and Function2 together?
- (ii) Write the statement to call these functions (Function 1 and Function 2).

- c) Define a class cricket in C++ with the following description: (4)

Private members:

- Target_score of type integer
- Overs_bowled of type integer
- Extra_time of type integer
- Penalty of type integer
- Cal_penalty() a member function to calculate penalty as follows:
If Extra_time<=10, Penalty=1
If Extra_time>10 but <=20 Penalty=2, otherwise, Penalty=5

Public members:

- A function Extradata () to allow user to enter values for Target_score, Over_bowled, Extra_time.
- A function DispData() to allow user to view the contents of all data members.

- d) Consider the following and answer the questions given below: (4)

```
class MNC
{
    char Cname[25];
protected:
    char Hoffice[25];
public:
    MNC();
```

```

        void EnterDate ();
        void DisplayData ();
};
class Branch:public MNC
{   long NOE;
    char Ctry[25];
    protected:
        void Association( );
    public:
        Branch( );
        void Add( );
        void Show( );
};
class Outlet: public Branch
{   char State[25];
    public: Outlet( );
        void Enter ();
        void Output();
};

```

- i) Which class's constructor will be called first at the time of declaration of an object of class Outlet?
- ii) How many bytes an object belonging to class Outlet require?
- iii) Name the member function(s), which are accessed from the object(s) of class Outlet.
- iv) Name the data member(s) which are accessible from the object(s) of class Branch
3. a) Write a function in C++ which accepts a 2D array of integers and its size as arguments and display the elements which lie on diagonals. (3)
- [Assuming the 2D array to be a square matrix with odd dimension, i.e., 3x3, 5x5, etc..]
 Example, if the array contents is
- | | | |
|---|---|---|
| 5 | 4 | 3 |
| 6 | 7 | 8 |
| 1 | 2 | 9 |
- Output through the function should be :
- Diagonal One : 5 7 9
 Diagonal Two: 3 7 1
- b) An array Arr[15][20] is stored in the memory along the row with each element occupying 4 bytes. Find out the Base Address and address of the element Arr[3][2], if the element [5][2] is stored at the address 1500. (3)
- c) Give the necessary declaration of queue containing integer. Write a user defined function in C++ to delete an integer from the queue. The queue is to be implemented as a linked list. (4)
- d) Write a function in C++ to print the sum of all the values which are either divisible by 2 or are divisible by 3 present in a two-dimensional array passed as the argument to the function. (2)
- e) Evaluate the following postfix notation of expression: (2)
- 10 20 + 25 15 - * 30 /
4. a) Observe the program segment given below carefully and fill the blanks marked statement 1 and statement 2 using seekg() and tellg() function for performing the required task. (1)

```

#include<fstream.h>
class Employee
{
int Eno;
char Ename[30];
public:
//Function to count the total number of records

```

```

int Countrec();
};
int Employee:: Countrec( )
{
fstream File;
File.open(“Emp.Dat”,ios::binary||ios::in);
_____// Statement 1
int Bytes = _____// Statement 2
int count = Bytes/sizeof(item);
File.close( );
return count;
}

```

b) Write a function in C++ to count the number of alphabets present in a textfile “Para.Txt”. (2)

c) Write a function in C++ to add new objects at the bottom of a binary file “Student.Dat”, assuming the binary file is containing the object of the following class (3)

```

class STUD
{ int Rno;
  char Name[20]; public :
void Enter ()
{
  cin>>Rno ;
  gets(Name);
}
void Display()
{ cout<<Rno<<Name<<endl;
}
};

```