



ANANDALAYA
SUMMATIVE ASSESSMENT -1
Class : XII

Subject : Computer Science
Date : 21/09/2016

M.M : 70
Time : 3 Hours

Q-1 **A** What are constructors & destructors? What purpose do they serve? (2)

B Name the header file to which the following belong: (2)

- (I) Abs() (II) isupper()
(III) strcmp() (IV) isalnum()

C Rewrite the following program after removing the syntactical error(s), if any. Underline each correction. (3)

```
#include<iostream.h>
const int Multiple 3;
void main( )
{
    value = 15;
    for(int Counter = 1;Counter = <5;Counter ++, Value -= 2)
    if(Value%Multiple == 0)
        cout<<Value * Multiple;
        cout<<endl;
    else
        cout<<Value + Multiple <<endl;
}
```

D Find the output of the following program: (3)

```
#include<iostream.h>
#include<string.h>
#include<ctype.h>
void Convert(char Str[ ],int Len)
{
    for(int Count=0;Count<Len;Count++)
    {
        if(isupper(Str[Count]))
            Str[Count]=tolower(Str[Count]);
        else if (islower(Str[Count]))
            Str[Count]=toupper(Str[Count]);
        else if(isdigit(Str[Count]))
            Str[Count]=Str[Count]+1;
        else Str[Count]='*';
    }
}

void main( )
{
    char Text[ ]="CBSE Exam 2016";
    int Size = strlen(Text);
    Convert(Text,Size);
}
```

```

    cout<<Text<<endl;
    for(int C=0,R=Size-1;C<=Size/2;C++,R--)
    {
        char Temp=Text[C];
        Text[C]=Text[R];
        Text[R]=Temp;
    }
    cout<<Text<<endl;
}

```

E Find the output of the following program:

(4)

```

#include<iostream.h>
void Indirect(int Temp=20)
{
    for(int I=10;I<=Temp;I+=5)
        cout<<I<<" ";
    cout<<endl;
}
void Direct(int &Num)
{
    Num+=10;
    Indirect(Num);
}
void main( )
{
    int Number=20;
    Direct(Number);
    Indirect( );
    cout<<"Number ="<<Number<<endl;
}

```

F Observe the following program SCORE.CPP carefully, if the value of Num entered by the user is 5, choose the correct possible output(s) from the options from (i) to (iv), and justify your option. (2)

```

//Program: SCORE.CPP
#include<stdlib.h>
#include<iostream.h>
void main( )
{
    randomize( );
    int Num,Rndnum;
    cin>>Num;
    Rndnum = random(Num) + 5;
    for(int N = 1;N<=Rndnum;N++)
        cout<<N<<" ";
}

```

(I) 1 2 3 4

(II) 1 2

(III) 1 2 3 4 5 6 7 8 9

(IV) 1 2 3

G Observe the following program GAME.CPP carefully, if the value of Num entered by the user is 14, choose the correct possible output(s) from the options from (i) to (iv), and justify your option. (2)

```

//Program:GAME.CPP
#include<stdlib.h>
#include<iostream.h>
void main( )
{
    randomize( );
    int Num,Rndnum;
    cin>>Num;
    Rndnum=random(Num)+7;
    for(int N=1;N<=Rndnum;N++)
        cout<<N<<" ";
}

```

Output Options:

(I) 1 2 3

(II) 1 2 3 4 5 6 7 8 9 10 11

(III) 1 2 3 4 5

(IV) 1 2 3 4

H Write definition for a function SumSequence() in C++ with two arguments / (4)
parameters – (double X and int n). The function should return a value of type double
and it should perform sum of the following series.

$1/x - 3!/x^2 + 5!/x^3 - 7!/x^4 + 9!/x^5 - \dots$ upto n terms.

Note: The symbol ! represents Factorial of a number
ie $5! = 1 \times 2 \times 3 \times 4 \times 5$.

Q-2 A Define the term Data Encapsulation in the context of Object Oriented Programming. (2)
Give a suitable example using a C++ code to illustrate the same.

B Declare a class myfolder with the following specifications: (5)

Private members of the class:

Filenames an array of strig of size[10][25]
(to represent all the names of files inside myfolder)
Availspace Long
(to represent total number of bytes available in myfolder)
Usedspace Long
(to represent total number of bytes used in myfolder)

Public members of the class:

Newfileentry() A function to accept values of Filenames,
Availspace and Usedspace from user.
Retavailspace() A function that returns the value of total
kilobytes available (1 kilobyte=1024 bytes)
Showfiles() A function that displays the names of all the files in Myfolder

C Define a class Student for the following specifications. (5)

Private members of the Student are:

roll_no Integer
Name array of characters of size 20
class_st array of characters of size 8
Marks array of integers of size 5
Percentage Float
Calculate() that calculates overall percentage marks and returns the percentage

Public Members of the Student are:

Readmarks reads mark and invoke the calculate function
Displaymarks prints the data.

Q-3 A Answer the questions (i) and (ii) after going through the following program:

(3)

```
#include <iostream.h>
#include<string.h>
class bazaar
{
    char Type[20] ;
    char product [20];
    int qty ;
    float price ;
    bazaar() //function 1
    {
        strcpy (type , "Electronic") ;
        strcpy (product , "calculator");
        qty=10;
        price=225;
    }
public :
    void Disp() //function 2
    {
        cout<< type <<"-"<<product<<"." <<qty<< "@" << price << endl ;
    }
};
void main ()
{
    Bazaar B ; //statement 1
    B. disp() ; //statement 2
}
```

- (I) Will statement 1 initialize all the data members for object B with the values given in the function 1 ? (YES OR NO). Justify your answer suggesting the correction(s) to be made in the above code.
- (II) What shall be the possible output when the program gets executed ? (Assuming, if required _ the suggested correction(s) are made in the program).

B Answer the questions (i) and (ii) after going through the following class :

(2)

```
class Science
{
    char Topic[20] ;
    int Weightage ;
public :
    Science () //Function 1
    {
        strcpy (Topic, "Optics") ;
        Weightage =30
        cout<<"Topic Activated";
    }
    ~Science() //Function 2
    {
        cout<<"Topic Deactivated";
    }
};
```

- (i) Name the specific features of class shown by Function 1 and Function 2 in the above example.
- (ii) How would Function 1 and Function 2 get executed ?

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

(4)

```
class Teacher
{
    char TNo[5],Tname[20],Dept[10];
    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],SName[20];
    public:
    School( );
    void SchEntry();
    void SchDisplay();
};
```

- (i) Which type of inheritance is depicted by 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 member(s) accessible from member functions of class School.
- (iv) If class School was derived privately from class Learner and privately from class Trainer, then name the member function(s) that could be accessed through Objects of class School.

Q-4 A Observe the program segment given below carefully and fill the blanks marked as Statement 1 and Statement 2 using seekp() and seekg() functions for performing the required task. (2)

```
#include <fstream.h>
class Item
{
    int Ino;char Item[20];
    public:
    //Function to search and display the content
    // from a particular record number
    void Search(int );
```

```

//Function to modify the content of a particular record number
void Modify(int);
};
void Item::Search(int RecNo)
{
    ifstream File;
    File.open("STOCK.DAT",ios::binary | ios::in);
    _____ //Statement 1
    File.read((char*)this,sizeof(Item));
    cout<<Ino<<"=="<<Item<<endl;
    File.close();
}
void Item::Modify(int RecNo)
{
    ifstream File;
    File.open("STOCK.DAT",ios::binary | ios::in | ios::out);
    cout>>Ino;cin.getline(Item,20);
    _____ //Statement 2
    File.write((char*)this,sizeof(Item));
    File.close();
}

```

- B Write a function in C++ to count the number of lines present in a text file "STORY.TXT". (3)
- C Write a function in C++ to search for a BookNo from a binary file "BOOK.DAT", assuming the binary file is containing the objects of the following class. (4)

```

class BOOK
{
    int Bno;
    char Title[20];
public:
    int RBno(){return Bno;}
    void Enter(){cin>>Bno;gets(Title);}
    void Display(){cout<<Bno<<Title<<endl;}
};

```

- Q-5 A What do you understand by Degree and Cardinality of a table? (2)
- B Study the following tables FLIGHTS and FARES and write SQL commands for the questions (i) to (iv) and give outputs for SQL quires (v) to (vi). Write SQL query to create both the table. (8)

TABLE: **FLIGHTS**

FL_NO	STARTING	ENDING	NO_FLIGHTS	NO_STOPS
IC301	MUMBAI	DELHI	8	0
IC799	BANGALORE	DELHI	2	1
MC101	INDORE	MUMBAI	3	0
IC302	DELHI	MUMBAI	8	0
AM812	KANPUR	BANGLORE	3	1
IC899	MUMBAI	KOCHI	1	4
AM501	DELHI	TRIVENDRUM	1	5
MU499	MUMBAI	MADRAS	3	3
IC701	DELHI	AHMEDABAD	4	0

TABLE:FLIGHTS

FL_NO	AIRLINES	FARE	TAX%
IC701	INDIAN AIRLINES	6500	10
MU499	SAHARA	9400	5
AM501	JET AIRWAYS	13450	8
IC899	INDIAN AIRLINES	8300	4
IC302	INDIAN AIRLINES	4300	10
IC799	INDIAN AIRLINES	1050	10
MC101	DECCAN AIRLINES	3500	4

- (I) Display FL_NO and NO_FLIGHTS from “KANPUR” TO “BANGALORE” from the table FLIGHTS.
 - (II) Arrange the contents of the table FLIGHTS in the ascending order of FL_NO.
 - (III) Display the FL_NO and **fare to be paid** for the flights from DELHI to MUMBAI using the tables FLIGHTS and FARES, where the **fare to be paid** = FARE+FARE+TAX%/100.
 - (IV) Display the minimum fare “Indian Airlines” is offering from the tables FARES.
 - (V) Select FL_NO,NO_FLIGHTS,AIRLINES from FLIGHTS, FARES Where STARTING = “DELHI” AND FLIGHTS.FL_NO = FARES.FL_NO
 - (VI) SELECT count (distinct ENDING) from FLIGHTS.
- C Study the following tables DOCTOR and SALARY and write SQL commands for the questions (i) to (iv) and give outputs for SQL queries (v) to (vi) : (8)
Write SQL query to create both the table.

TABLE: DOCTOR

ID	NAME	DEPT	SEX	EXPERIENCE
101	Johan	ENT	M	12
104	Smith	ORTHOPEdic	M	5
107	George	CARDIOLOGY	M	10
114	Lara	SKIN	F	3
109	K George	MEDICINE	F	9
105	Johnson	ORTHOPEdic	M	10
117	Lucy	ENT	F	3
111	Bill	MEDICINE	F	12
130	Murphy	ORTHOPEdic	M	15

TABLE: SALARY

ID	BASIC	ALLOWANCE	CONSULTAION
101	12000	1000	300
104	23000	2300	500
107	32000	4000	500
114	12000	5200	100
109	42000	1700	200
105	18900	1690	300
130	21700	2600	300

- (I) Display NAME of all doctors who are in “MEDICINE” having more than 10 years experience from the Table DOCTOR.
- (II) Display the average salary of all doctors working in “ENT” department using the tables DOCTORS and SALARY where Salary = BASIC+ALLOWANCE.
- (III) Display the minimum ALLOWANCE of female doctors.
- (IV) Display the highest consultation fee among all male doctors.
- (V) SELECT count (*) from DOCTOR where SEX = “F”
- (VI) SELECT NAME, DEPT , BASIC from DOCTOR, SALRY Where DEPT = “ENT” AND DOCTOR.ID = SALARY.ID