DELHI PUBLIC SCHOOL, JAMMU

Sub: Computer Science

Class: XII

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Assignment for Pre-Board I

Session(2018-19)

(Programming in c++)

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1. (a) Find the correct identifiers out of the following, which can be used for naming variable, constants or functions in a C++ program :   **2**

    While, for, Float, new, 2ndName, A%B, Amount2, _Counter

    (b) Observe the following program very carefully and write the names of those header file(s), which are essentially needed to compile and execute the following program successfully :   **1**

```
typedef char TEXT[80];

void main()

{

    TEXT Str[] = "Peace is supreme";

    int Index=0;

    while (Str[Index]!='\0')

        if (isupper(Str[Index]))

            Str[Index++]='#';

        else
```

```
                    Str[Index++]='*';


        puts(Str);


}
```

(c) Observe the following C++ code very carefully and rewrite it after removing any/all syntactical errors with each correction underlined. **2**

Note : Assume all required header files are already being included in the program.

```
#Define float Max=70.0;

Void main()

{

    int Speed

    char Stop='N';

    cin>>Speed;

    if Speed>Max
```

```
            Stop='Y';

    cout<<Stop<<end;

}
```

(d) Write the output of the f ll wing C++ program code : **2**

Note Assume all required header files are already being included in the program.

```
void Position(int &C1,int C2=3)


{

    C1+=2;

    C2+=Y;


}


void main()

{
```

```
        int P1=20, P2=4;

        Position(P1);

        cout<<P1<<","<<P2<<end1;

        Position(P2,P1);

        cout<<P1<<","<<P2<<end1;

    }
```

(e)Write the output of the following C++ program code :   3

    Note : Assume all required header files are already being included in the program.

```
    class Calc

    {

        char Grade;

        int Bonus;

    public:

        Calc() {Grade='E';Bonus=0;}

        void Down(int G)

        {

            Grade-=G;

        }

        Void Up(int G)
```

```cpp
    {

        Grade+=G;

        Bonus++;

    }

    void Show()

    {

        cout<<Grade<<"#"<<Bonus<<end1;

    }

};

void main()

{

    Calc c;

    C.Down(2);

    C.Show();

    C.Up(7);

    C.Show();

    C.Down(2);

    C.Show();
```

```
}
```

(f) Study the following program and select the possible output(s) from the options (i) to (iv) following it. Also, write the maximum and the minimum values that can be assigned to the variable NUM. **2**

Note :

– Assume all required header files are already being included in the program.

– random(n) function generates an integer between 0 and n – 1.

```cpp
void main()
{
    randomize();
    int NUM;
    NUM=random(3)+2;
    char TEXT[]="ABCDEFGHIJK";
    for (int I=1;I<=NUM; I++)
    {
        for(int J=NUM; J<=7;J++)
            cout<<TEXT[J];
        cout<<endl;
    }
}
```

(i)   FGHI
    FGHI   (ii)   BCDEFGH   (iii) EFGH
                         BCDEFGH
            FGHI
    FGHI   EFGH

EFGH

(

i

EFGH v

)

C

D

E

F

G

H

C

D

E

F

G

H

2.(a)   What is a copy constructor ? Give   suit   ble example in C++ to illustrate with its

definition within a class and a dec aration of an object with the help of it.   **2**

(b)   Observe the following C++ c de and answer the questions (i) and (ii) :

```cpp
class Traveller
{
    long PNR;
    char TName[20];
public
    Traveller()                              //Function 1
    {cout<<"Ready"<<end1;}
    void Book(long P,char N[])               //Function 2
    {PNR = P; strcpy(TName, N);}
    voidPrint()                              //Function 3
    {cout<<PNR << TName <<end1;}
    ~Traveller()                             //Function 4
    {cout<<"Booking cancelled!"<<end1;}
};
```

(i)   Fill in the blank statements in Line 1 and Line 2 to execute Function 2 and

Function 3 respectively in the following code :   **1**

```cpp
void main()
{
    Traveller T;
    _____                    //Line 1
    _____                    //Line 2
}//Stops here
```

(ii)   Which function will be executed at }//Stops here ? What is this function

referred as ? **1**

(c) Write the definition of a class PIC in C++ with following description : **4**

Private Members

 — **Pno**   **//Data member for Picture Number (an integer)**

          aglasem

 — **Category**   **//Data member for Picture Category (a string)**

 — **Location**   **//Data member for Exhibition Location**

       (a string)

 — **FixLocation**   **//A member function to assign**

         //Exhibition Location per category

         //as shown in the following table

Category	Location
Classic	Amina
Modern	Jim Plaq
Antique	Ustad Khan

Public Members

– Enter()   **//A function to allow user to enter values**

     //Pno, category and call FixLocation() function

– SeeAll()   **//A function to display all the data members**

(d) Answer the questions (i) to (iv) based on the following : **4**

```
class Exterior

{

    int OrderId;

    char Address[20];
```

```cpp
    protected:

        float Advance;

    public:

        Exterior();

        void Book(); void View();

    };

    class Paint:public Exterior

    {

        int WallArea,ColorCode;

    protected:

        char Type;

    public:

        Paint();

        void PBook();

        void PView();

    };

    class Bill : public Paint

    {

        float Charges;
```

```
        void Calculate();

public :

   Bill();

   void Billing();

   void Print();

};
```

(i) Which type of In eritance out of the following is illustrated in the above example ?

   –Single Level Inheritance

   –Multi Level Inheritance

   –Multiple Inheritance

(ii) Write the names of all the data members, which are directly accessible from the member functions of class Paint.

(iii) Write the names of all the member functions, which are directly accessible from an object of class Bill.

(iv) What will be the order of execution of the constructors, when an object of class Bill is declared ?

3. (a) Write the definition of a function Alter(int A[], int N) in C++, which should change all the multiples of 5 in the array to 5 and rest of the elements as 0. For example, if an array of 10 integers is as follows : **2**

A[0]	A[1]	A[2]	A[3]	A[4]	A[5]	A[6]	A[7]	A[8]	A[9]
55	43	20	16	39	90	83	40	48	25

After executing the function, the array content should be changed as follows :

A[0]	A[1]	A[2]	A[3]	A[4]	A[5]	A[6]	A[7]	A[8]	A[9]
5	0	5	0	0	5	0	5	0	5

(b) A two dimensional array P[20] [50] is stored in the memory along the row with each of its element occupying 4 bytes, find the address of the element P[10] [30], if the element P[5] [5] is stored at the memory location 15000. **3**

(c) Write the definition of a member function Pop( ) in C++, to delete a book from a dynamic stack of TEXTBOOKS considering the followingde is already included in the program. **4**

```
struct TEXTBOOKS                                          com/

{

   char ISBN[20]; char TITLE[80];

   TEXTBOOKS *Link;

};

class STACK

{

   TEXTBOOKS *Top;
```

```
public:

   STACK(){Top=NULL;}

   void Push();

   void Pop();

   ~STACK();

};
```

(d) Write a function REVCOL (int P[] [5], int N, int M) in C++ to display the content
     of a two dimen ional array, with each column content in reverse order.   **3**

     Note Array may contain any number of rows.

     For example, if the content of array is as follows :

15	12	56	45	51
13	91	92	87	63
11	23	61	46	81

     The function should display output as :

```
    11    23    61    46    81

    13    91    92    87    63

    15    12    56    45    51
```

(e) Convert the following infix expression to its equivalent Postfix expression,

     showing the stack contents for each step of conversion.   **2**

```
X / Y + U* (V-W)
```

4.   (a)Write function definition for SUCCESS( ) in C++ to read the content of a text file

STORY.TXT, count the presence of word STORY and display the number of occurrence of this word. **2**

Note :

– The word STORY should be an independent word

– Ignore type cases (i.e. lower/upper case)

Example :

If the content of the file STORY.TXT is as follows :

```
Success shows others that we can do it. It is possible to
achieve success with hard work. Lot of money does not mean
SUCCESS.
```

The function SUCCESS( ) should display the following :

```

```
3

(b) Write a definition for function Economic ( ) in C++ to read each record of a binary file ITEMS.DAT, find and display those items, which costs less than 2500. Assume that the file ITEMS.DAT is created with the help of objects of class

ITEMS, which is defined below : **3**

```cpp
class ITEMS
{
    int ID;char GIFT[20]; float Cost;
public

    void Get()
    {
        cin>>CODE;gets(GIFT);cin>>Cost;
    }
    void See()
    {
```

```
        cout<<ID<<":"<<GIFT<<":"<<Cost<<endl;
    }
    float GetCost(){return Cost;}.
};
```

(c) Find the output of the following C++ code considering that the binary file CLIENTS.DAT exists on the hard disk with records of 100 members.   **1**

```
class CLIENTS
{
    int Cno;char Name[20];
public :
    void In(); void Out();
};
void main()
{
    fstream CF;
    CF.open("CLIENTS.DAT",ios::binary|ios::in);
    CLIENTS C;
    CF.read((char*) &C, sizeof(C));
    CF.read((char*) &C, sizeof(C));
    CF.read((char*) &C, sizeof(C));
    int POS=CF.tellg()/sizeof(C);
    cout<<"PRESENT RECORD:"<<POS<<endl;
    CF.close();
}
```

4

3

5 (a) What will be the status of the following list after fourth pass of bubble sort and fourth pass of selection sort used for arranging the following elements in descending order ?

```
14, 10, -12, 9, 15, 35
```

(b) Write PUSH (Books) and POP (Books) methods in python to add Books and remove Books considering them to act as Push and Pop operations of Stack.

3

2

(c) Evaluate the following postfix notation of expression. Show status of stack after every operation.

```
84, 62, -, 14, 3, *, +
```

Section – C

6. (a) Observe the following table carefully and write the na es of the most appropriate columns, which can be considered as (i) candidate k ys and (ii) primary key. **2**

Id	Product	Qty	Price	Transaction Date
101	Plastic Folder 12"	100	3400	2014-12-14
104	Pen Stand Standard	200	4500	2015-01-31
105	Stapler Medium	250	1200	2015-02-28
109	Punching Machine Big	200	1400	2015-03-12
103	Stapler Mini	100	1500	2015-02-02

(b) Consider the following DEPT and WORKER tables. Write SQL queries for (i) to (iv) and find outputs for SQL queries (v) to (viii) : **6**

Table DEPT

DCODE	DEPARTMENT	CITY
D01	MEDIA	DELHI

D02	MARKETING	DELHI
D03	INFRASTRUCTURE	MUMBAI
D05	FINANCE	KOLKATA
D04	HUMAN RESOURCE	MUMBAI

Table : WORKER

WNO	NAME	DOJ	DOB	GENDER	DCODE
1001	George K	2013-09-02	1991-09-01	MALE	D01
1002	Ryma Sen	2012-12-11	1990-12-15	FEMALE	D03
1003	Mohitesh	2013-02-03	1987-09-04	MALE	D05
1007	Anil Jha	2014-01-17	1984-10-19	MALE	D04
1004	Manila Sahai	2012-12-09	1986-11-14	FEMALE	D01
1005	R SAHAY	2013-11-18	1987-03-31	MALE	D02
1006	Jaya Priya	2014-06-09	1985-06-23	FEMALE	D05

Note : DOJ refers to date of joining and DOB refers to date of Birth of workers.

(i)   To display Wno, Name, Gender from the table WORKER in descending order of Wno.

(ii)   To display the Name of all the FEMALE workers from the table WORKER.

(iii) To display the Wno and Name of those workers from the table WORKER

       who are born between '1987-01-01' and '1991-12-01'.

(iv)   To count and display MALE workers who have joined fter '1986-01-01'.

(v)   **SELECT COUNT(*), DCODE FROM WORKER**

       GROUP BY DCODE HAVING COUNT(*)>1;

(vi)   **SELECT DISTINCT DEPARTMENT FROM DEPT;**