VIDYASAGAR ACADEMY SENIOR SECONDARY ENGLISH MEDIUM SCHOOL, BARGARH

CLASS -12
SUMMER VACATION HOME-TASK

ENGLISH (CORE)

Note : Do the assignment on Ruled Sheets and submit the work in a separate file.

ASSIGNMENT – 1

Q1. Choose any 3 comprehension passages from a practice book and do note making and summary. **(Stick to the format and the rules taught in the class.)**

Q2. Draft a notice about a school tour to Goa during the summer vacation. You are Kiran/ Karan, Tour Incharge.

Q3. Draft a poster for the forthcoming Geetanjali Fest being organised in your school in July.

Q4. Draft a poster to spread awareness regarding the precautions to be taken to prevent heatstroke.

Q5. Write a letter to the SHO of the police station in your locality about the theft of your vehicle.

Computer Sc.

1.   (a) Define any two features of OOPs. Also give suitable example in C++.
(b) Name the Header file(s) that shall be needed for successful compilation of the
        following C++ code

```
void main()
{
    int a[10];      dfddfd
    for(int i=0;i<10;i++)
    {
cin>>a[i];
    if(a[i]%2==0)
        a[i]=pow(a[i],3);
    else
        a[i]=sqrt(a[i]);
```

```
        if(a[i]>32767)
                exit(0);
        }
        getch();
}
```

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

```
        #include<iostream.h>
        type def int integer;
        struct number
        {
                integer a [5];
        }
        void main()
        {
                number x;
                for(int i=0;i<5;i++)
                        cin>>x[i].a;
                getch();
        }
```

(d) Find the output of the following program :

```
        #include<iostream.h>
        #include<string.h>
        void main()
        {
                char *a[2]={"Amit","Sumit"};
                for(int i=0;i<2;i++)
                {
                        int l=strlen(a[i]);
                        for(int j=0;j<l;j++,a[i]++)
                                cout<<*a[i]<<" : ";
                        cout<<endl;
                }
        }
```

(e) Find the output of the following program

```
        #include<iostream.h>
        class student
        {
                public:
                student()
```

```cpp
                {
                        cout<<"\n Computer Science";
                }
                ~student()
                {
                        cout<<" subject";
                }
        }st;
        void main()
        {
                cout<<" is my best"
        }
```

(f) In the following C++ program , what will the maximum and minimum value of r generated with the help of random function.

```cpp
        #include<iostream.h>
        #include<stdlib.h>
        void main()
        {
                int r;

                randomize();
                r=random(20)+random(2);
                cout<<r;
        }
```

(g) Write a function in C++ which accepts a integer array and its size as an arguments and prints the output (using nested loops) in following format :

Example : if the array is having

1 2 4 5 9

Then the output should be

1

2 2

4 4 4 4

5 5 5 5 5

9 9 9 9 9 9

2.   (a) Differentiate between a global variable and a local variable. Also give suitable example in C++.

(b) Name the Header file(s) that shall be needed for successful compilation of the following C++ code

```cpp
void main()
{
```

```cpp
        char st[20];
        gets(st);
        if(isaplha(st[0])
                cout<<"Starts with alphabet";
        else
                cout<<strlen(st);
}
```
(c) Rewrite the following program after removing syntactical error(s) if any. Underline each correction.
```cpp
        #include<iostream.h>
        #define SIZE =10
        void main()
        {       int a[SIZE]={10,20,30,40,50};
                float x=2;
                SIZE=5;
for(int i=0;i<SIZE;i++)
                        cout<<a[i]%x;
        }
```
(d) Find the output of the following program :
```cpp
        #include<iostream.h>
        #include<string.h>
        struct Student
        {
                int rno;
                char name[20];
        };
        void main()
        {       student a[2]={1,"Amit",}{2,"Sumit"}};
                for(int i=0;i<2;i++)
                {       cout<<"\n Rno"<<a[i].rno;
                        cout<<"\n Name ";
                        for(int j=0;j<strlen(a[i].name);j++)
                                cout<<a[i].name[i]<<" ";
                }
}
```
(e) Find the output of the following program
```cpp
        #include<iostream.h>
        void Modify(int &a,int b=10)
        {
                if(b%10==0)
```

```
                                a+=5;
                        for(int i=5;i<=a;i++)
                                cout<<b++<<":";
                        cout<<endl;
                }
                void Disp(int x)
                {
                        if(x%3==0)
                                Modify(x);
                        else
                                Modify(x,3);
                }
                void main()
                {       Disp(3);
                        Disp(4);
                        Modify(2,20);
                }
```

(f) In the following C++ program , fill in the blanks for the statement1 with the help of random function , if the number generated by the random number is

supposed to be between the range of 20-2000

```
#include<iostream.h>
#include<stdlib.h>
void main()
{       int r;
        randomize();
        r=_____//statement 1
        cout<<r;
}
```

3.   (a) Write a function in C++ which accepts a character array and its size as an arguments and reverse that array without using second array and library function.

Example : if the array is having

 "Computer Science"

Then after reversal it should rearranged as

"ecneicS retupmoC"

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

```
#include<iostream.h>
void main()
```

```
{       const MAX=0;
        int a,b;
        cin<<a>>b;
        if(a>b) MAX=a;
        for(x=0,x<MAX;x++) cout<<x;
}
```

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

```
#include<iostream.h>
Main()
{
        int ch=9,sch=90;
        char S[2,2];
        if ch<=9
                cout<<ch;
        for(int x=0;x<2;x++)
                for(int y=0;y<2;y++)
                {
                if(y==0) S[x][y] = "A";
                else S[x][y] = 'B';
                        cout>>S[x][y];
                }
        getch(); }
        (d)  class X
{
        public:
                int a,b;
                void int(void)
                {
                a=b=0;
                }
                int sum(void);
                int square(void);
                };
int sum(void)
{
  return a+b;
}
int square(void)
        {
        return sum() *sum();
```

```
}
```

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

```
include<iostream.h>
void main()
{
      int R; W=90;
      while W>60
      {
            R=W-50;
            switch(W)
            {      20:cout<<"Lower range"<<endl;
                   30: cout<<"Middle Range"<<endl;
                   20: cout<<"Higher Range"<<endl;
            }
      }
}
```

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

```
 #include<iostream.h>
main()
{
      int x[5],*y,z[5];
      for(i=0;i<5;i++)
      {
            x[i]=I;
            z[i]=i+3;
            y=z; x=y;
      }}
```

4. (a) Rewrite the following program after removing syntactical error(s) if any. Underline each correction.

```
    class ABC
{
      int x=10;
      float y;
      ABC(){ y=5; }
      ~ABC() {}
};
void main()
{
```

```
        ABC a1,a2;
}
```

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

```
void main()
{
        const int i=20;
        const int *const ptr=&i;
        (*ptr)++;
        int j=15;
        ptr =&j;
}
```

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

```
 #include(iostream.h)
void main()
{
        int X[]={60,50,30,40},Y; count=4;
        cin>>Y;
for(i=count-1;i>=0;i--)
switch(i)
{
case 0;
case 2: cout<<Y*Y[i]<<endl; break;
case 1:;
cae 3: cout>>Y+X[i];
}
        }
```

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

```
struct group
{
        int x1,x2;
}
void main()
{
        g1,g2 group;
        cin>>g1.x1<<g2.x2;
        g2=g1;
        cout<<g2.x2<<g2.x1<<endl;
        2+=g1.x1;
```

```
        cout<<g1.x1<<g1.x2;
}
```
(e) Rewrite the following program after removing syntactical error(s) if any. Underline each correction.

```
structure swimmingclub
{
        int mem number;
        char mamname[20]
        char memtype[]="LIG";
};
void main()
        {
                swimmingclub per1,per2;
                cin<<"Member Number";
                cin>>memnumber.per1;
                cout<<"\n Member name";
                cin>>per1.membername;
                per1.memtype="HIG";
                per2=per1;
                cin<<"\n Member number "<<per2.memnumber;
                cin<<"\n Member name "<<per2.memname;
                cin<<"\n Member number "<<per2.memtype;
        }
```
(f) Rewrite the following program after removing syntactical error(s) if any. Underline each correction.

```
#include<iostream.h>
CLASS STUDENT
{
        int admno;
        float marks;
        public :
        STUDENT()
        {
                admno=0;
                marks=0.0;
        }
        void input()
        {
                cin>>admno;
                cin>>marks;
```

```
        }
        void output()
        {
                cout<<admno;
                cout<<marks;
        }
}
void main()
{
        STUDENT s;
        input(s);
}
```

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

```
#include<iostream.h>
void main()
{
        struct STUDENT
        {
                char stu_name[20];
                char stu_sex;
                int stu_age=17;
        }student;
        gets(stu_name);
        gets(stu_sex);
}
Output
    1.  #include<iostream.h>
void display(char *s)
{
        for(int x=0;s[x]>0;x++)
        {
                for(int y=0;y<=x;y++)
                        cout<<s[y];
                        cout<<endl;
        }
}
void main()
{
```

```
            char *t="DOONPUBLIC";
            display(t);
}
    2.  #include<iostream.h>
int &max (int &x,int &y)
{
        if(x>y)
                return (x);
        else
                return (y);
}
void main()
{
        int A=10,B=13;
        max(A,B)=-1;
        cout<<"A= "<<A<<"B= "<<B<<endl;
        max(B,A)=7;
        cout<<"A= "<<A<<"B= "<<B<<endl;
}
    3.  #include<iostream.h>
#include<conio.h>
int main()
{
        char string[]="Pointers and strings";
        cout<<*(&string[2])<<endl;
        cout.write(string+5,15).put('\n');
        cout<<*(string+3)<<"\n";
        return 0;
}
    4.  #include<iostream.h>
int a=10;
        void main()
        {
                void demo(int &,int,int*);
                int a=20,b=5;
demo(::a,a,&b);
        cout<<::a<<a<<b<<endl;
                }
                void demo(int &x,int y,int *z)
                {
                        a+=x;
```

```
                              y*=a;
                              *z=a+y;
                                    cout<<x<<y<<*z<<endl;
                    }
     5.  char *S="ObjeCT";
int L=strlen(S);
for(int C=0;C<L;C++)
        if(islower(S[C]))
                S[C]=toupper(S[C]);
        else
                if(C%2==0)
                        S[C]='E';
                else
                        S[C]=tolower(S[C]);
cout<<"New message :"<<S;


     6.  #include<iostream.h>
void Execute(int &x,int y=200)
{
        int temp=x+y;
        x+=temp;
        if(y!=200)
                cout<<temp<<" "<<x<<" "<<y<<endl;
}
void main()
{
        int a=50,b=20;
        Execute(b);
        cout<<a<<" "<<b<<endl;
        Execute(a,b);
        cout<<a<<" "<<b<<endl;
}
     7.  #include<iostream.h>
void print(char *p)
{
        p="Pass";
        cout<<"\n Value is "<<p<<endl;
}
void  main()
{
        char *q="Best Of luck";
```

```cpp
        print(q);
        cout<<"\n New value is "<<q;
}
    8.  char *s="GOODLUCK";
for(int x=strlen(s)-1;x>0;x--)
{
        for(int y=0;y<=x;y++) cout<<s[y];
        cout<<endl;
}
    9.  #include<iostream.h>
int a=3;
void demo(int x, int y,int &z)
{
        a+=x+y;
        z=a+y;
        y+=x;
        cout<<x<<" "<<y<<" "<<z<<endl;
}
void main()
{
        int a=2,b=5;
demo(::a,a,b);
cout<<::a<<" "<<a<<" "<<b<<endl;
demo(::a,a,b);
}
    10.#include<iostream.h>
int max(int &x,int &y,int &z)
{
        if(x>y &&y>z)
        {
                y++;
                z++;
                return x;
        }
        else
                if(y>x)
                        return y;
                else
                        return z;
}
void main()
```

```cpp
{
    int a=10,b=13,c=8;
    a=max(a,b,c);
    cout<<a<<b<<c<<endl;
    b=max(a,b,c);
    cout<<++a<<++b<<++c<<endl;
}
11. void main()
{
    int a=32,*X=&a;
    char ch=65,&cho=ch;
    cho+=a;
    *X+=ch;
    cout<<a<<','<<ch<<endl;
}
12. #include<iostream.h>
struct point
{
    int x,y;
};
void show(point p)
{
    cout<<p.x<<';'<<p.y<<endl;
}
void main()
{
    point U={0,10},V,W;
    V=U;
    V.x+=0;
    W=V;
    U.y+=10;
    U.x+=5;
    W.x-=5;
    show(U);
    show(V);
    show(W);
}
13. void main()
{
    int x[]={10,20,30,40,50};
    int *p,**q;
```

```cpp
        int *t;
        p=x;
        t=x+1;
        q=&t;
        cout<<*p<<","<<**q<<","<<*t++;
}
```

14.
```cpp
class state
{
        char *statename;
int size;
        public:
        state()
        {
                size=0;
                statename=new char[size+1];
        }
void display() { cout<<statename<<endl; }
state(char *s)
{
        size=strlen(s);
        statename=new char[size+1];
        strcpy(statename,s);
}
                void replace(state &a, state &b)
                {       size=a.size+b.size;
                        delete statename;
                        statename=new char[size+1];
                        strcpy(statename,a.statename);
                        strcat(statename,b.statename);
                }
        };
void main()
{
                char *temp="Delhi";
                state state1(temp),state2("mumbai"),state3("Nagpur"),S1,S2;
                S1.replace(state1,state2);
                S2.replace(S1,state3);
                S1.display();
                S2.display();
        }
```

15.
```cpp
void main()
```

```
{
        long NUM=1234543;
        int f=0,s=0;
        do{
                int rem=NUM%10;
                if(rem%2==0)
                        f+=rem;
                        else
                                s+=rem;
                        NUM/=10;
                }while(NUM>0);
                cout<<f-s;
        }
    16.    Find the output of the following program :
        #include<iostream.h>
        #include<string.h>
        void main()
        {
                char *a[2]={"Amit","Sumit"};
                for(int i=0;i<2;i++)
                {       int l=strlen(a[i]);
                         for(int j=0;j<l;j++,a[i]++)
                                 cout<<*a[i]<<" : ";
                         cout<<endl;
                }
}
    (e) Find the output of the following program
            #include<iostream.h>
            void Modify(int &a,int b=10)
            {       if(b%10==0)
                            a+=5;
                    for(int i=5;i<=a;i++)
                            cout<<b++<<":";
                    cout<<endl;
            }
            void Disp(int x)
            {       if(x%3==0)
                            Modify(x);
                    else
                            Modify(x,3);
            }
```

```
            void main()
            {       Disp(3);
                Disp(4);   Modify(2,20);           }
```

PHYSICS

1. If **E** = 5**i** + 3**j** + 2**k** units, Calculate the electric flux through a surface of area 40 units in Y-Z plane.
2. Calculate Coulomb force between two alpha particles separated by a distance of 3.2×10^{-15} m in vacuum.
3. By what factor the capacitance of a metal sphere increase if its volume is made 27 times?
4. A conductor of length 'L' is connected to a dc source of potential difference 'V'. If length is doubled by keeping V constant, how is the drift speed be affected?
5. A battery of emf 3V and internal resistance 0.2 Ω is being charged by a current of 6 A. What is the potential difference between the terminals of the battery?
6. Two wires A and B of same material have their lengths in the ratio 1:5 and diameters in the ratio 3:2. If the resistance of the wire B is 180Ω, find the resistance of wire A.
7. Two small charged spheres A and B have charges 10 µC and 40 µC respectively, held at 90 cm from each other. At what distance from A, **E** will be zero?
8. State and prove Gauss Law in Electrostatics.

9. Three charges each equal to 'q' are placed at the three corners of a square of side 'a'. Find the electric field at the fourth corner.
10. The force experienced by a unit charge when placed at a distance of 0.10 m from the middle of an electric dipole on its axial line is 0.025 N. When it is placed at a distance of 0.2 m , the force becomes 0.002 N. Calculate the dipole length (It's not negligible compared to the distance involved).
11. Define an electric line of force. Draw its sketch for an electric dipole. State any of its two properties.
12. An electric dipole of length 2cm is placed with its axis making an angle of 60^0 to a uniform electric field of 10^5 N/C. If it experiences a torque of $8\sqrt{3}$ Nm, calculate a) magnitude of each charge comprising the dipole b) potential energy of dipole.
13. Derive an expression for the Electric potential at an arbitrary point due to an electric dipole. Hence discuss the axial and equatorial case.
14. Two capacitors C1 and C2 charged to V1 and V2 respectively and then connected in parallel. Calculate the common potential across the combination, the electrostatic energy stored in the system and the change in the electrostatic energy from its initial value.

15. Derive a relation between electric current and drift velocity. Hence deduce Ohm's Law. Hence obtain the expression for resistivity in terms of number density of free electrons and relaxation time.

16. Define mobility of a charge carrier. A potential difference of 6V is applied across a conductor of length 0.12 m . Calculate the drift speed of electrons if the electron mobility is 5.6×10^{-6} $m^2\,V^{-1}\,s^{-1}$.

17. Obtain potential due to an electric dipole at an arbitrary point.

18. State the principle of a Potentiometer. Explain with a circuit diagram how it can be used to compare the emfs of two primary cells.

19. A potentiometer wire of length 100 cm has a resistance of 10 Ω. It is connected in series with an external resistor R and a battery of 2 V of negligible internal resistance. A source of 10 mV is balanced against a length of 40 cm of the potentiometer wire. Find the value of 'R'.

20. a) A current of 2 mA passed through a color coded carbon resistor of yellow, green and orange colors respectively. Calculate the voltage drop.

    b) Write the dimensional formula for Resistance.

    a) A cylindrical wire is stretched to increase its length by 10%. Calculate % increase in resistance.

21. a) Without using Gauss Law, obtain the expression for electric field at a point at distance 'y' from an infinite long straight charged wire having linear charge density λ.

    b) Use Gauss Law to find Electric field at a point near uniformly charged infinite plane sheet.

22. a) Derive an expression for electrostatic potential energy of a system of two charges.

    b) Two charges 5 nC and -2 nC are placed at (2 cm, 0, 0) and (y cm , 0, 0) in a region with no external electric field . If U $= -$ 0.5 μJ for the system, Find y .

    c) Write the formula for capacitance of a spherical capacitor of radius R.

Educational Excursion and Project

Visit Science Museum during the vacation. Make a project of any topic of your choice in the realm of physics which you observed there. Make a project file with contents not more than 7-8 pages. The content should be informative and interesting. This project will be marked as an assessment for the CBSE practical examination worth 3 marks and viva will be asked from it by the external examiner. Hence, do take it very seriously.

Chemistry

ALCOHOLS, PHENOLS AND ETHERS

1.   Write the structures of the compounds whose names are given below :

(i)   3, 5-Dimethoxyhexane-1, 3, 5-triol

(ii)   Cyclohexylmethanol

(iii)   2-Ethoxy-3-methylpentane

(iv)   3-Chloromethylpentan-2-ol

(v)   p-Nitroanisole

2.   Describe the following reactions with example :

(i)   Hydroboration oxidation of alkenes

(ii)   Acid catalysed dehydration of alcohols at 443K.

(iii)   Williamson synthesis

(iv)   Riemer Tiemann reaction.

(v)   Kolbe's reaction

(vi)   Friedel-Crafts acylation of Anisole.

3.   What happens when :

(i)   aluminium reacts with t-butylalcohol

(ii)   phenol is oxidised with chromic acid

(iii)   cumene is oxidised in the presence of air and the product formed is treated with dilute acid.

(iv)   phenol is treated with conc. HNO3.

(v)   phenol is treated with chloroform in presence of dilute NaOH.

4.   How will you convert

(i)   propene to propan-l-ol.

(ii)   anisole to phenol

(iii)   butan-2-one to butan-2-ol

(iv)   ethanal to ethanol

(v)   phenol to ethoxybenzene

(vi)   1-Phenylethene to 1-Phenylethanol

(vii)   formaldehyde to cyclohexylmethanol

(viii)   butylbromide to pentan-1-ol.

(ix)   toluene to benzyl alcohol

(x)   1-Propoxypropane to propyliodide

(xi)   ethylbromide to 1-ethoxyethane

(xii)   methyl bromide to 2-methoxy-2-methylpropane

(xiii)   ethylbromide to ethoxybenzene

(xiv)   ethanol to benzylethyl ether.

5.   Describe the mechanism of Chemical reactions in which alcohol acts as a nucleophile or an electrophile.

6.   Give reason for the following :

(i)   The C–O–C bond angle in dimethylether is (111.7°)

(ii)   Alcohols have higher boiling points than ethers of comparable molecular mass.

(iii)   Phenols are more acidic than alcohols.

(iv)   Nitrophenol is more acidic than o-methoxyphenol.

(v)   Phenol is more reactive towards electrophilic substitution reaction than benzene.

Biology

Dear students,

        Please remember always,

 "Science operates on the edge of what is known,,, to discover more about what is   not…
You can increase your knowledge of the world around you by listening to others, reading books, watching scientific television channels and surfing the Internet… However, one of

the most exciting ways of increasing your knowledge is to put on the shoes of the scientist and conduct your own experimental investigations….

You all can gain competence and expertise to deal with the subject project chosen by you. For this you will have to begin with a journey.

Step 1 :For this, you have to first Select a topic for which you need to work and read different chapters of your syllabus and also consults scientific literature, magazines, newspapers, use search engines of internet, etc. Then select the topic of your interest.

Step 2: Planning of the project:

Collect all possible available information about the topic. Prepare a rough outline of the experimental   work   of   the   project.

Step 3. Experimentation for the project:

Plan and conduct the experimental work with precision so that you are sure to get correct results.

Following points should be kept in mind while performing the experiments for the proje work.

i.   Collect data with honesty and utmost care.

ii.   Record only your observations and data.

iii.   Repeat the experiment several times and take average of the results of all th experiments.

iv.   Compare your results with those available in the reference books.

v.   Discuss your results in the light of available information about the project and draw out   meaningful conclusion.

vi.   Make use of histograms, graphs, photographs, diagrams or models, case studies to suppor your   observations and conclusions.

vii. Give a list of books, magazines/journals and internet sites you have consulted during the course of your project.

viii. Acknowledge the guidance, help and assistance rendered by your teachers, parents, neighbours and friends by expressing sincere gratitude and thanks to them in the beginning.

4.**How   to   write:**

You are required to get their project report typed on bond paper sheets and to represent it in the best possible manner. The project report should be written in the following sequence:

- ❖ **Title / Aim** – Name of the project.
- ❖ **Introduction** – Information collected from various sources related to the topic.
- ❖ **Requirements** – Materials required for experimental work.
- ❖ **Procedure** – Write details of the experimental work you have performed.
- ❖ **Observations** – Record your observations / data in the form of tables, histograms, graphs, photographs, etc.
- ❖ **Results / Conclusion** – Give analysis of the data and compare your results with those available in the literature and draw conclusions.
- ❖ **References** – Give the list of books, internet websites, magazines or journals you have consulted, for the project work.

Some examples are given below:

1. To study the variation in the rate of mitotic cell division in the root tips of onion.
2. Effect of pH on the germination of seeds.(different types of seeds, cotton, Petri dishes).
3. Design and carry out an experiment to investigate the effect of the salinity of water on the growth of one type of plant.
4. Conduct a survey of pesticides at your local nursery, garden supplies shop or supermarket. Construct a table in which to record:
a. the names of commercial brands of insecticides

b. the target organisms
c. the active chemical ingredients
d. information given about safety precautions.

 4.Find out how the main ingredients act in each of the pesticides and include them in a report in your survey.
5. Find out how ants follow a trail, and how and why birds migrate.

6. Study effects of antibiotics on microorganisms.

7. Comparative study of the chlorophyll content in five different species of plants.

8. Estimation of vitamin C content in different types of fruits.

9. To test the effect of varying salt concentrations on the process of osmosis using an egg

10. Design an experiment to compare the pH of various brands of toothpaste. What does the pH of toothpaste suggest about tooth decay?