



# DOON INTERNATIONAL SCHOOL, SRINAGAR .

## SUBJECT: ENGLISH

### Assignment: I

### Grade: X

## Chapter no.3: Two Stories About Flying.

Instructions:

- Students are to read in between the lines and understand the chapter on their own before initiating to respond to the given assignment.
- The objective of this assignment is to make the students acquainted with the following ideas:
  - One should trust one's abilities because "the fear of suffering is worse than the suffering itself".
  - How one's judgement gets distorted due to fantasizing and how it creates problems.

### **PART I (His First Flight)**

#### **About the Author:**

Liam O'Flaherty was an Irish novelist, short-story writer and major figure in the Irish literary renaissance. He served on the Western Front as a soldier in the Irish Guards and was badly injured. After the war, he was a founding member of the Communist Party of Ireland. His brother Tom Moidhc O'Flaherty (also a writer) was also involved in radical politics. A native Irish-speaker from the Gaeltacht, O'Flaherty wrote almost exclusively in English, except for a small number of short stories in the Irish language.

#### **Plot Summary:**

The story "His First Flight" by "Liam O' Flaherty" is about a young seagull who is afraid to fly. All his younger siblings despite their much shorter wings flew fearlessly while he could not gather the courage to trust his own wings. The young seagull became sad when he saw his parents perfecting his younger siblings in the art of flying. His parents scold and taunt him for not even trying. They even call him a "coward". They tell him that he should at least try and also threaten him to leave him alone and hungry if he does not try it. The following day, he is left in isolation and upon feeling hungry; he tries to seek the attention of his family members. Only his mother, who is withering a fish in an attempt to eat it, notices his son. The young seagull cries out of starvation hoping his mother would help. On seeing this his mother come to him with the fish, he gets excited. But on noticing that his mother stopped mid-way, he gets maddened out of hunger and takes a dive at the fish, forgetting for a moment that he is afraid to fly. Finally, he took his first flight. All the family members celebrate his victory by cheering and dancing around him. He also attempts at floating in the sea that he was once afraid of. Thus, he overcomes his fear and realizes that it is all in the mind.

#### **Additional questions:**

#### **These questions should be done by the students themselves.**

Q1: Compare and contrast the young seagull in the beginning and the end of the lesson 'His First Flight'.

Q2: Describe the method used by the seagull's family to help the young seagull overcome his fear.

Q3: Hesitations and fears play necessary parts in human life but we get success in any enterprise only when we overcome our doubts, hesitations and fears. Justify this statement in the light of the young seagull's effort to muster the courage to fly in the air.

**NOTE: Do all the textual as well as additional questions on your fair notebook.**

## **PART II (Black Aeroplane)**

### **About the Author:**

Frederick McCarthy Forsyth is an English author, journalist, former spy, and occasional political commentator. He is best known for thrillers such as 'The Day of the Jackal', 'The Odessa File', 'The Fourth Protocol', 'The Dogs of War', 'The Devil's Alternative', 'The Fist of God', and 'The Veteran, Avenger'.

### **Plot Summary:**

The story "Black Aeroplane" is about a pilot who feels happy and contented to fly over a city that is sleeping (at the night time). He is flying from Paris to London. While taking his flight, he dreams about the long holiday with his family. He also fantasizes about the scrumptious breakfast he would have upon landing. As soon as he crosses Paris, he gets a look of the dark clouds that were a sign of the upcoming storm. The right decision would have been to turn back to Paris for the sake of safety. But he being overshadowed by his dreams and not wanting to delay them, risks the life of his passengers and heads straight into the storm. Everything gets dark, he is unable to see, all his direction instruments stopped functioning and he loses the control over the plane. When all hope was lost, he saw another plane whose pilot was more than willing to rescue them. The author was panicking as there was very less amount of fuel left. The anonymous pilot guided them out of the storm and disappeared as soon as they saw light. Upon landing, when he asks the lady in the control room about the other pilot, he is left in shock when she says that his plane was the only plane in the sky.

### **Additional questions:**

**These questions should be done by the students themselves.**

Q1: 'Everything was going well. It was an easy flight.' What went wrong suddenly?

Q2: Describe the appearance of the strange black aeroplane in the most hopeless situation. How did the pilot of the black aeroplane help the narrator to come out of the storm clouds and land safely?

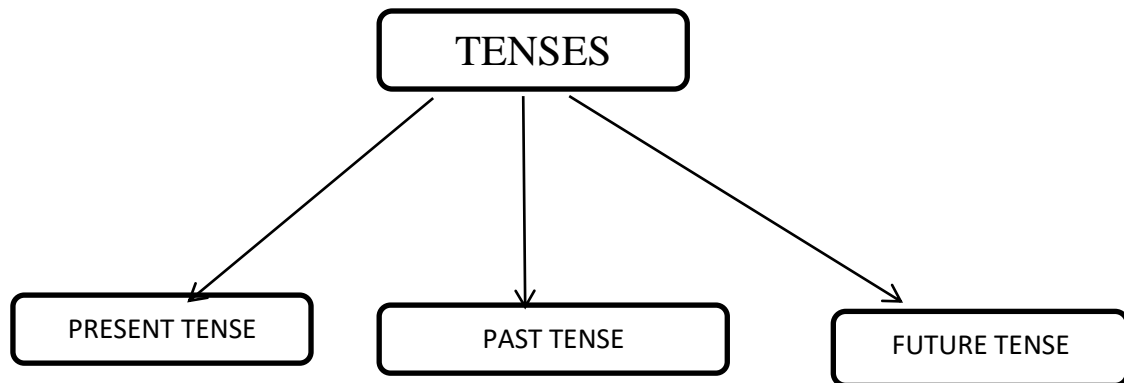
Q3: Describe the flight of the pilot before he encountered dark clouds?

**NOTE: Do all the textual as well as additional questions on your fair notebook.**

# GRAMMAR

## Tenses

The word 'tense' comes from Latin word tempus, which means 'time'. The tense of a verb shows the time of an action or event. There are three dimensions in which actions at a particular time can be expressed- Present, Past, Future.



### 1. PRESENT TENSE.

#### b. Simple Present Tense:

- It expresses a habitual action, a general truth, a narration.
- It is used to present live commentary of a sporting event.

**Example:** Earth revolves around the sun.

#### c. Present Continuous Tense:

- It denotes an action happening at the same time of speaking.

**Example:** It is raining outside.

#### d. Present Perfect Tense:

- It expresses recently completed activities.

**Example:** She has eaten the dinner.

#### e. Present Perfect Continuous Tense:

- It expresses an action that began earlier and is still continuing.

**Examples:** She has been reading this book for last two hours.

### 2. PAST TENSE.

#### a. Simple Past Tense:

- It expresses an action that happened in past and bears no relation to the present time.

**Example:** I received her letter a week ago.

#### b. Past continuous Tense:

- It denotes an action that was going on at a given period in past.

**Example:** I was reading a book in the morning.

#### c. Past Perfect Tense:

- It indicates an action that had been completed before some other action started in the past.

**Example:** The doctor had left before the patient arrived.

**d. Past Continuous Tense:**

- It indicates an action that started in the past, continued for some time and was finished in the past.

**Example:** She had been crying with pain all night but no one came to help her.

**1. FUTURE TENSE.**

**a. Simple Future Tense:**

- It expresses an action which will happen in future.

**Example:** I think Sameer will win the competition.

**b. Future Continuous Tense:**

- It indicates an action which will be in progress at some given time in future.

**Example:** He will be visiting us next week.

**c. Future Perfect Tense:**

- It denotes an action that will be completed by a certain time in the immediate future.

**Example:** They will have declared our result by Monday.

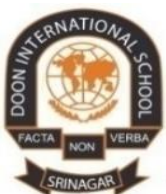
**d. Future Perfect Continuous Tense:**

- It indicates how long some action will have continued at a specific time in future.

**Example:** The gardener will have been plucking the flowers for one hour.

**Exercise:**

Robin Hood was the legendary bandit of England who \_\_\_\_\_ (had stolen, stole, steals) from the rich to help the poor. The stories about Robin \_\_\_\_\_ (appeal, appealed, were appealing) to common folk because he \_\_\_\_\_ (stood, stands, was standing) up against, and frequently \_\_\_\_\_ (outwits, outwitted, outwitting) people in power.



**DOON INTERNATIONAL SCHOOL SRINAGAR**

Doon International School, Srinagar

# SUBJECT: MATHEMATICS

## Assignment: I

### Grade: X

#### Chapter: Quadratic Equations

##### **Instructions:**

- Students are to read and understand the chapter on their own before initiating to respond to the given assignment.
- The objective of this assignment is to make the students acquainted with following :
  - Check if a given equation is a quadratic equation.
  - Represent given situation in the form of a quadratic equation.
  - Find the roots of a quadratic equation by factorisation method.
  - Find the roots of a quadratic equation by completing the square method.
  - Derivation of quadratic formula.
  - Nature of roots of quadratic equation.

##### **INTRODUCTION:**

When a polynomial  $f(x)$  is equated to zero or a constant, we get an equation which is known as a polynomial equation. If  $f(x)$  is a linear polynomial, then  $f(x) = 0$  is called a linear equation. If  $f(x)$  is a quadratic polynomial i.e.  $f(x) = ax^2 + bx + c$ ,  $a \neq 0$ . Then  $f(x) = 0$ , i.e.,  $ax^2 + bx + c = 0$ ,  $a \neq 0$  is called a quadratic equation in variable  $x$ . Thus in algebra, a quadratic equation (from the Latin quadratus for "square") is any equation that can be rearranged in the form  $ax^2 + bx + c = 0$ ,  $a \neq 0$ , where  $x$  represents an unknown, and  $a$ ,  $b$ , and  $c$  are real numbers.

##### **Quadratic equation**

If  $f(x)$  is a quadratic polynomial, then  $f(x) = 0$  is called a quadratic equation.

The general form of a quadratic equation is  $ax^2 + bx + c = 0$ , where  $a, b, c \in R$  and  $a \neq 0$ .

##### **Roots of a quadratic equation**

Let  $f(x) = 0$  be a quadratic equation, then the zeroes of the polynomial  $f(x)$  are called the roots of the equation  $f(x) = 0$ .

Thus,  $x = \alpha$  is a root of  $f(x) = 0$  if and only if  $f(\alpha) = 0$ .

As already discussed in chapter Polynomials that a quadratic polynomial may or may not have real zeroes the same follows in case of quadratic equation. In addition since a quadratic polynomial can have at most two zeroes it follows that the quadratic equation can have at most two roots.

Finding the roots of a quadratic equation is known as solving the quadratic equation.

##### **Question / Solution**

Q. Check whether the following are quadratic equations:

- (i)  $(x + 1)^2 = 2(x - 3)$
- (ii)  $x^2 - 2x = (-2)(3 - x)$
- (iii)  $(x - 2)(x + 1) = (x - 1)(x + 3)$
- (iv)  $(x - 3)(2x + 1) = x(x + 5)$
- (v)  $(2x - 1)(x - 3) = (x + 5)(x - 1)$
- (vi)  $x^2 + 3x + 1 = (x - 2)^2$
- (vii)  $(x + 2)^3 = 2x(x^2 - 1)$
- (viii)  $x^3 - 4x^2 - x + 1 = (x - 2)^3$

Solution:

- (i) We know that any equation of the form  $ax^2 + bx + c = 0$  is called a quadratic equation, where  $a, b, c$  are real numbers and  $a \neq 0$ .

Given equation:  $(x + 1)^2 = 2(x - 3)$

Using the formula  $(a + b)^2 = a^2 + 2ab + b^2$

$$\Rightarrow x^2 + 2x + 1 = 2x - 6$$

$$\Rightarrow x^2 + 7 = 0$$

Here,  $a = 1, b = 0$  and  $c = 7$ .

Thus, the given equation is a quadratic equation.

- (ii) We know that any equation of the form  $ax^2 + bx + c = 0$  is called a quadratic equation, where  $a, b, c$  are real numbers and  $a \neq 0$ .

Given equation:  $x^2 - 2x = (-2)(3 - x)$

$$\Rightarrow x^2 - 2x = -6 + 2x$$

$$\Rightarrow x^2 - 4x + 6 = 0$$

Here,  $a = 1, b = -4$  and  $c = 6$ .

Thus, the given equation is a quadratic equation.

- (iii) We know that any equation of the form  $ax^2 + bx + c = 0$  is called a quadratic equation, where  $a, b, c$  are real numbers and  $a \neq 0$ .

Given equation:  $(x - 2)(x + 1) = (x - 1)(x + 3)$

$$\Rightarrow x^2 + x - 2x - 2 = x^2 + 3x - x - 3$$

$$\Rightarrow 3x - 1 = 0$$

Which is not of the form  $ax^2 + bx + c = 0, a \neq 0$ .

So, the given equation is not a quadratic equation.

- (iv) We know that any equation of the form  $ax^2 + bx + c = 0$  is called a quadratic equation, where  $a, b, c$  are real numbers and  $a \neq 0$ .

Given equation:  $(x - 3)(2x + 1) = x(x + 5)$

$$\Rightarrow 2x^2 + x - 6x - 3 = x^2 + 5x$$

$$\Rightarrow x^2 - 10x - 3 = 0$$

Here,  $a = 1, b = -10$  and  $c = -3$ .

Thus, the given equation is a quadratic equation.

(v), (vi) and (vii) try yourself.

Q. Represent the following situations in the form of quadratic equations:

- (i) The area of a rectangular plot is  $528 \text{ m}^2$ . The length of the plot (in metres) is one more than twice its breadth. We need to find the length and breadth of the plot.
- (ii) The product of two consecutive positive integers is 306. We need to find the integers.
- (iii) Rohan's mother is 26 years older than him. The product of their ages (in years) 3 years from now will be 360. We would like to find Rohan's present age.
- (iv) A train travels a distance of 480 km at a uniform speed. If the speed had been 8 km/h less, then it would have taken 3 hours more to cover the same distance. We need to find the speed of the train.

Solution:

- (i) Let the breadth of the plot be  $x$  m.

Hence, the length of the plot is  $(2x + 1)$  m. (Since, given that length is one more than twice its breadth)

Therefore, area of a rectangle = length  $\times$  breadth

Given: Area of rectangle =  $528 \text{ m}^2$

$$\therefore 528 = x(2x + 1)$$

$$\Rightarrow 2x^2 + x - 528 = 0 \dots\dots\dots (i)$$

Which is of the form  $ax^2 + bx + c = 0$

Here  $a = 2(\neq 0), b = 1$  and  $c = -528$

Thus, quadratic equation (i) represents the situation given in the question and roots of this equation will represent the breadth of the plot.

- (II) We know that the difference between two consecutive positive integers is 1.

So, let the consecutive positive integers be  $x$  and  $x + 1$ .

Given that their product is 306.

$$\therefore x(x + 1) = 306$$

$$\Rightarrow x^2 + x - 306 = 0 \dots\dots\dots (i)$$

Which is of the form  $ax^2 + bx + c = 0$

Here  $a = 1 (\neq 0)$ ,  $b = 1$  and  $c = -306$

Thus, quadratic equation (i) represents the situation given in the question and roots of this equation will represent the smaller positive integer.

(iii) Let Rohan's age be  $x$ .

Therefore his mother's age =  $x + 26$  (given that Rohan's mother is 26 years older than him)

3 years from now:

Rohan's age will be =  $x + 3$

Mother's age will be =  $x + 26 + 3 = x + 29$

Also given that the product of their ages after 3 years is 360.

$$\therefore (x + 3)(x + 29) = 360$$

On simplification, we get

$$x^2 + 32x - 273 = 0 \dots\dots\dots (i)$$

Which is of the form  $ax^2 + bx + c = 0$

Here  $a = 1 (\neq 0)$ ,  $b = 32$  and  $c = -273$

Thus, quadratic equation (i) represents the situation given in the question and positive root of this equation will represent the Rohan's present age.

(iv) In first case,

Let the speed of train be  $x$  km/h.

$$\text{Total time taken to travel 480 km} = \frac{480}{x} \text{ hrs}$$

In second case,

Given: speed became 8 km/h less

So, the speed of train =  $(x - 8)$  km/h

Also given that the train will take 3 more hours to cover the same distance.

$$\text{Therefore, time take to travel 480 km} = \frac{480}{x} + 3 \text{ hrs}$$

We know that, Speed  $\times$  Time = Distance

$$\therefore (x - 8) \times \left( \frac{480}{x} + 3 \right) = 480$$

$$\Rightarrow 480 + 3x - \frac{3840}{x} - 24 = 480$$

$$\Rightarrow 3x - \frac{3840}{x} - 24 = 0$$

$$\Rightarrow 3x^2 - 24x - 3840 = 0$$



$$\Rightarrow x^2 - 8x - 1280 = 0 \dots\dots (i)$$

Which is of the form  $ax^2 + bx + c = 0$ .

Here  $a = 1 (\neq 0)$ ,  $b = -8$  and  $c = -1280$

Thus, quadratic equation (i) represents the situation given in the question and positive root of this equation will represent the speed of train.

### Solution of quadratic equation by factorization

For an expression of the form  $a(b + c)$ , the expanded version is  $ab + ac$ , i.e., multiply the term outside the bracket by everything inside the bracket (e.g.  $2(x + 3) = 2x^2 + 6x$ ). For an expression of the form  $(a + b)(c + d)$ , the expanded version is  $ac + ad + bc + bd$ , in other words everything in the first bracket should be multiplied by everything in the second.

Factorizing is the reverse of expanding brackets, so it is, for example, putting  $2x^2 + x - 3$  into the form  $(2x + 3)(x - 1)$ . This is an important way of solving quadratic equations.

The first step of factorizing an expression is to 'take out' any common factors which the terms have. So if you were asked to factorize  $x^2 + x$ , since  $x$  goes into both terms, you would write  $x(x + 1)$ .

Factorize:  $12y^2 - 20y + 3 = 12y^2 - 18y - 2y + 3$  [here the  $20y$  has been split up into two numbers whose multiple is 36. 36 was chosen because this is the product of 12 and 3, the other two numbers].

The first two terms,  $12y^2$  and  $-18y$  both divide by  $6y$ , so 'take out' this factor of  $6y$ .

$$6y(2y - 3) - 2y + 3 \text{ [we can do this because } 6y(2y - 3) \text{ is the same as } 12y^2 - 18y]$$

Now, make the last two expressions look like the expression in the bracket:

$$6y(2y - 3) - 1(2y - 3) = (2y - 3)(6y - 1)$$

This is also known as factorization by splitting the middle term.

Thus any for the above quadratic equation  $12y^2 - 20y + 3 = 0$

$$\Rightarrow (2y - 3)(6y - 1) = 0$$

The two linear factors will give the roots of the above quadratic equation.

### Question / Answers

Q. Find the roots of the following quadratic equations by factorization:

(i)  $x^2 - 3x - 10 = 0$

(ii)  $2x^2 + x - 6 = 0$

(iii)  $\sqrt{2}x^2 + 7x + 5\sqrt{2} = 0$

(iv)  $2x^2 - x + \frac{1}{8} = 0$

$$(v) \quad 100x^2 - 20x + 1 = 0$$

Solution:

- (i) To find the roots of given quadratic equation, let's first factorize the given quadratic expression  $x^2 - 3x - 10$ . The given quadratic expression can be written as follows:

$$\begin{aligned}x^2 - 3x - 10 &= x^2 - 5x + 2x - 10 \text{ (we factorize by method of splitting the middle term)} \\ &= x(x - 5) + 2(x - 5) \\ &= (x - 5)(x + 2)\end{aligned}$$

Now, the roots of this quadratic equation are the values of  $x$  for which  $(x - 5)(x + 2) = 0$

$$\therefore x - 5 = 0 \text{ or } x + 2 = 0$$

$$\text{i. e., } x = 5 \text{ or } x = -2$$

Hence, the roots of this quadratic equation are 5 and  $-2$ .

- (ii) To find the roots of given quadratic equation, let's first factorize the given quadratic expression  $2x^2 + x - 6$ .

The given quadratic expression can be written as follows:

$$\begin{aligned}2x^2 + x - 6 &= 2x^2 + 4x - 3x - 6 \text{ (we factorize by method of splitting the middle term)} \\ &= 2x(x + 2) - 3(x + 2) \\ &= (x + 2)(2x - 3)\end{aligned}$$

Now, the roots of this quadratic equation are the values of  $x$  for which  $(x + 2)(2x - 3) = 0$

$$\therefore x + 2 = 0 \text{ or } 2x - 3 = 0$$

$$\text{i. e., } x = -2 \text{ or } x = \frac{3}{2}$$

Hence, the roots of this quadratic equation are  $-2$  and  $\frac{3}{2}$ .

- (iii) To find the roots of given quadratic equation, let's first factorize the given quadratic expression  $\sqrt{2}x^2 + 7x + 5\sqrt{2}$ . The given quadratic expression can be written as follows:

$$\begin{aligned}\sqrt{2}x^2 + 7x + 5\sqrt{2} &= \sqrt{2}x^2 + 5x + 2x + 5\sqrt{2} \text{ (We factorize by method of splitting the middle term)} \\ &= x(\sqrt{2}x + 5) + \sqrt{2}(\sqrt{2}x + 5) \\ &= (\sqrt{2}x + 5)(x + \sqrt{2})\end{aligned}$$

Now, the roots of this quadratic equation are the values of  $x$  for which

$$(\sqrt{2}x + 5)(x + \sqrt{2}) = 0$$

$$\therefore \sqrt{2}x + 5 = 0 \text{ Or } x + \sqrt{2} = 0$$

$$\text{i. e., } x = -5/\sqrt{2} \text{ or } x = -\sqrt{2}$$

Hence, the roots of this quadratic equation are  $-5/\sqrt{2}$  and  $\sqrt{2}$ .

(iv) and (v) try yourself.

Q. Solve the problems given below.

Represent the following situations mathematically:

- (i) John and Jivanti together have 45 marbles. Both of them lost 5 marbles each, and the product of the number of marbles they now have is 124. We would like to find out how many marbles they had to start with.
- (ii) A cottage industry produces a certain number of toys in a day. The cost of production of each toy (in rupees) was found to be 55 minus the number of toys produced in a day. On a particular day, the total cost of production was ₹ 750. We would like to find out the number of toys produced on that day.

Solution:

- (i) Let the number of John's marbles be  $x$ .

So, the number of Jivanti's marbles =  $45 - x$

If both lost 5 marbles each,

Then number of marbles left with John =  $x - 5$

And number of marbles left with Jivanti =  $45 - x - 5 = 40 - x$

Given that the product of their marbles is 124.

$$\therefore (x - 5)(40 - x) = 124$$

$$\Rightarrow x^2 - 45x + 324 = 0$$

$$\Rightarrow x^2 - 36x - 9x + 324 = 0$$

$$\Rightarrow x(x - 36) - 9(x - 36) = 0$$

$$\Rightarrow (x - 36)(x - 9) = 0$$

Either  $x - 36 = 0$  or  $x - 9 = 0$

$$i. e., x = 36 \text{ or } x = 9$$

If the number of John's marbles = 36

Then, the number of Jivanti's marbles =  $45 - 36 = 9$

If the number of John's marbles = 9

Then, the number of Jivanti's marbles =  $45 - 9 = 36$ .

- (ii) Let the number of toys produced be  $x$ .

$$\therefore \text{The cost of production of each toy} = ₹ (55 - x)$$

So, the total cost of production =  $x(55 - x)$

As per the question, the total cost of production of the toys = ₹ 750

$$\therefore (55 - x)x = 750$$

$$\Rightarrow x^2 - 55x + 750 = 0$$

$$\Rightarrow x^2 - 25x - 30x + 750 = 0$$

$$\Rightarrow x(x - 25) - 30(x - 25) = 0$$

$$\Rightarrow (x - 25)(x - 30) = 0$$

Either  $x - 25 = 0$  or  $x - 30 = 0$

i. e.,  $x = 25$  or  $x = 30$

Thus, the number of toys produced that day will be either 25 or 30.

Q. The altitude of a right triangle is 7 cm less than its base. If the hypotenuse is 13 cm, find the other two sides?

Solution:

As per the question, hypotenuse is 13 cm.

Let the base of the right triangle be  $x$  cm.

Therefore, its altitude =  $(x - 7)$  cm

From Pythagoras theorem,

$$\text{Base}^2 + \text{Altitude}^2 = \text{Hypotenuse}^2$$

$$\therefore x^2 + (x - 7)^2 = 13^2$$

$$\Rightarrow x^2 + x^2 + 49 - 14x = 169$$

$$\Rightarrow 2x^2 - 14x - 120 = 0$$

$$\Rightarrow x^2 - 7x - 60 = 0$$

$$\Rightarrow x^2 - 12x + 5x - 60 = 0$$

$$\Rightarrow x(x - 12) + 5(x - 12) = 0$$

$$\Rightarrow (x - 12)(x + 5) = 0$$

Either  $x - 12 = 0$  or  $x + 5 = 0$ , i.e.,  $x = 12$  or  $x = -5$

Since sides of a triangle are positive,  $x$  can only take value 12.

Hence, the base of the right triangle is 12 cm and the altitude of this triangle is  $(12 - 7)$  cm = 5 cm.

### **Solving quadratic equation by completing the square method:**

Completing the Square is a method used to solve a quadratic equation by changing the form of the equation so that the left side is a perfect square trinomial. We may use the following algorithm to obtain the roots of a quadratic equation by using the method of completing the squares.

#### **Algorithm:**

1. Obtain the quadratic equation. Let the equation be  $ax^2 + bx + c = 0$ , where  $a, b, c \in R$  and  $a \neq 0$ . Transform the equation so that the constant term  $c$ , is alone on the right side.

$$\text{i.e., } ax^2 + bx = -c$$

2. If  $a$ , the leading coefficient (the coefficient of the  $x^2$  term), is not equal to 1, divide both sides by  $a$ .

$$\text{i.e., } x^2 + \frac{b}{a}x = -\frac{c}{a}$$

3. Add the square of half the coefficient of the x – term, i.e.  $(b/2a)^2$  to both sides of the equation.

$$\text{i.e., } x^2 + \frac{b}{a}x + \left(\frac{b}{2a}\right)^2 = -\frac{c}{a} + \left(\frac{b}{2a}\right)^2$$

4. Factor the left side as the square of a binomial.

$$\left(x + \frac{b}{2a}\right)^2 = \frac{b^2 - 4ac}{4a^2}$$

5. Take the square root of both sides.

$$\left(x + \frac{b}{2a}\right) = \pm \sqrt{\frac{b^2 - 4ac}{4a^2}}$$

6. Solve for x.

$$x = \frac{b}{2a} \pm \frac{\sqrt{b^2 - 4ac}}{2a}$$

$$\Rightarrow x = \frac{b \pm \sqrt{b^2 - 4ac}}{2a} \quad \dots \quad (a)$$

Equation (a) is known as the quadratic formula and the quantity  $b^2 - 4ac$  is called discriminant and is generally denoted by D.

### NATURE OF THE ROOTS

For the quadratic equation  $ax^2 + bx + c = 0$ , where  $a, b, c \in R$ . We have by the quadratic formula  $x = \frac{b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{b \pm \sqrt{D}}{2a}$

Clearly the above values (roots) exist in R iff  $D \geq 0$

Case 1. If  $D = 0$ , then the quadratic equation has two equal (rational) real roots given by

$$x = \frac{b \pm \sqrt{0}}{2a} = \frac{b}{2a}$$

Case 2. If  $D > 0$ , then the quadratic equation has two distinct real roots given by

$$x = \frac{b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{b \pm \sqrt{D}}{2a}$$

Case 3. If  $D < 0$ , in this case the given quadratic equation has no real roots, as there is no real number whose square is negative.

### Question /Answer

Q. 1. Find the roots of the following quadratic equation, if they exist, by the method of completing the square:

(i)  $2x^2 - 7x + 3 = 0$

Solution:

Given quadratic equation:  $2x^2 - 7x + 3 = 0$

$$\Rightarrow 2x^2 - 7x = -3$$

Dividing both sides by 2 (coefficient of  $x^2$ ), we get

$$x^2 - \frac{7}{2}x = -\frac{3}{2}$$

Add the square of half the coefficient of the  $x$  - term, i.e.  $(\frac{7}{4})^2$  to both sides of the equation

$$x^2 - \frac{7}{2}x + \left(\frac{7}{4}\right)^2 = \left(\frac{7}{4}\right)^2 - \frac{3}{2}$$

$$\Rightarrow \left(x - \frac{7}{4}\right)^2 = \frac{25}{16}$$

$$\Rightarrow \left(x - \frac{7}{4}\right) = \pm \frac{5}{4}$$

$$\Rightarrow x = \frac{7}{4} \pm \frac{5}{4}$$

$$\Rightarrow x = \frac{7 \pm 5}{4}$$

Hence,  $x = \frac{1}{2}, 3$  are the roots of the given quadratic equation.

Q. Find the nature of the roots of quadratic equation  $2x^2 - 3x + 5 = 0$ . If the roots exist, find them?

Solution: Given quadratic equation is  $2x^2 - 3x + 5 = 0$

Comparing this equation with  $ax^2 + bx + c = 0$ , we obtain  $a = 2, b = -3, c = 5$

$$\text{Discriminant} = b^2 - 4ac = (-3)^2 - 4(2)(5) = 9 - 40 = -31$$

$$\text{As } b^2 - 4ac < 0,$$

Hence, no real root is possible for the given equation.

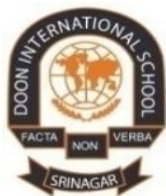
### Assignment

- A cottage industry produces a certain number of pottery articles in a day. It was observed on a particular day that the cost of production of each article (in rupees) was 3 more than twice the number of articles produced on that day. If the total cost of production on that day was ₹. 90, find the number of articles produced and the cost of each article.
- Find the roots of the following quadratic equations, if they exist, by the method of completing the square:  
(i)  $2x^2 + x - 4 = 0$       (ii)  $2x^2 + x + 4 = 0$       (iii)  $3x^2 - x + 4 = 0$
- Find the roots of the quadratic equations given by applying the quadratic formula.

(i)  $2x^2 + 12x - 4 = 0$     (ii)  $x^2 + 61x + 4 = 0$     (iii)  $x^2 + 6x + 4 = 0$

- A factory kept increasing its output by the same percentage every year. Find the percentage if it is known that the output is doubled in the last two years.
- The sum of the reciprocals of Rehman's ages, (in years) 3 years ago and 5 years from now is  $\frac{1}{3}$ . Find his present age?
- If the price of a book is reduced by ₹5, a person can buy 5 more books for ₹300. Find the original list price of the book.
- One fourth of a herd of camels was seen in the forest. Twice the square root of the herd had gone to mountains and the remaining 15 camels were seen on the bank of the river. Find the total number of camels?
- Find the roots of the following quadratic equations (if they exist) by the method of completing the square.

(i)  $4x^2 + 4\sqrt{3}x + 3 = 0$     (ii)  $\sqrt{2}x^2 - 3x - 2\sqrt{2} = 0$



# DOON INTERNATIONAL SCHOOL, SRINAGAR

## SUBJECT: Science

### Assignment: I

### Grade: X

## Chapter: Chemical Reactions and Equations

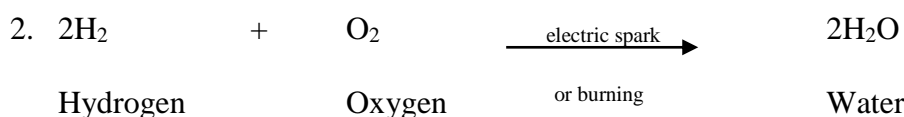
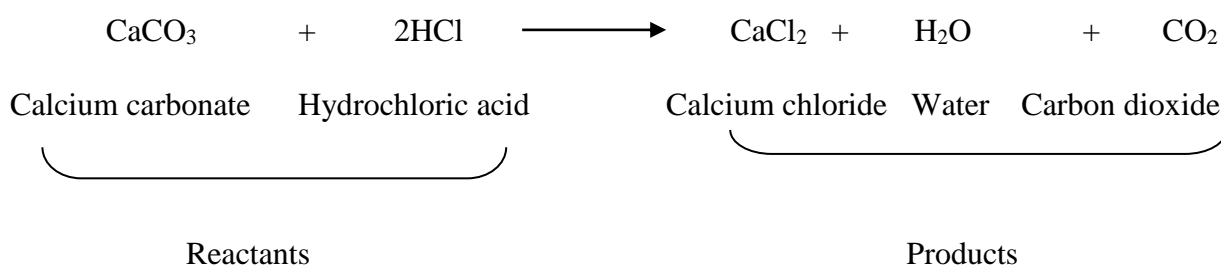
### Instructions:

- Students are to read and understand the chapter on their own before initiating to respond to the given assignment.
- The objective of this assignment is to make the students acquainted with;
  - Students will come to know what the real meaning of chemical reactions is.
  - Students will come to know how to balance the chemical reactions.
  - Students will come to know different aspects of chemical reactions in our daily life.

**Chemical Reaction:** - A chemical reaction is a chemical change in which new chemical substances with new properties are formed under a set of certain specified and controlled conditions. During the chemical reactions, rearrangements of atoms take place due to the breaking of old bonds and making of new bonds between the reacting molecules and the product molecules. The substances taking part in a chemical reaction are called **reactants** and the substances formed in a chemical reaction are called **products**. In a chemical reaction, the amount of reactants decreases whereas that of the products increases with time, until the reaction is over.

**Some examples of chemical reactions are as follows:**

1. Calcium carbonate reacts with dilute hydrochloric acid to form calcium chloride, carbon dioxide and water.



Hydrogen gas and oxygen combine with the introduction of spark to form water.

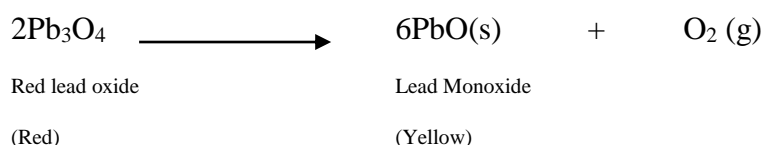




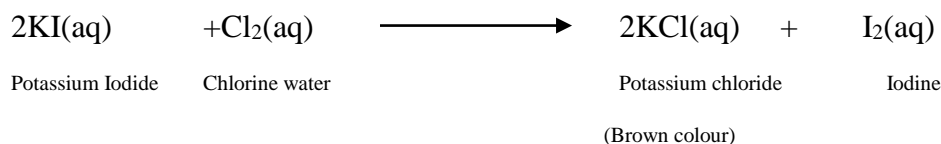
## ii) Change In Colour:

There are some reactions which are characterized by colour change.

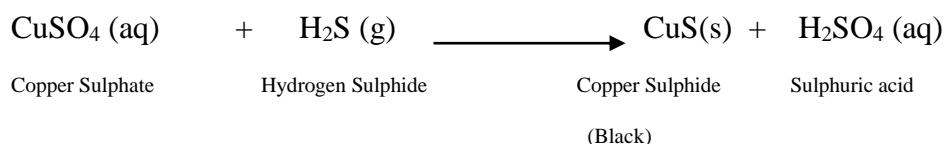
- When red lead oxide is heated, yellow lead monoxide is formed.



- When chlorine water is added to KI solution, brown colour appears.



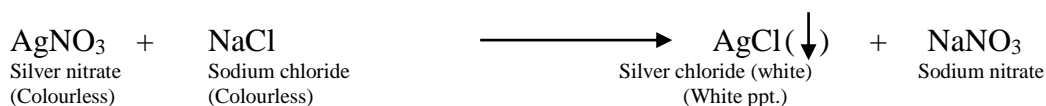
- When copper sulphate is treated with hydrogen sulphide gas, it turns the solution black due to the formation of copper sulphide in addition to sulphuric acid.



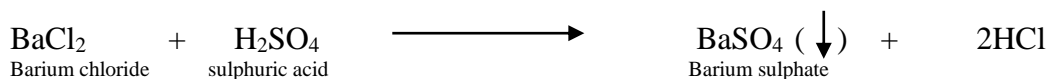
## 1. Formation of Precipitate:- Precipitate is a suspension of solute particles which remains out of the solution.

In certain reactions when solutions of two reagents are mixed, one of the products formed gets precipitated immediately. Colour of the precipitate depends upon the reagents used in the reaction.

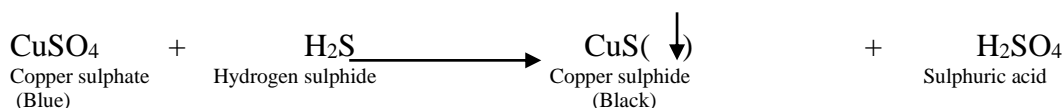
- When a solution of silver nitrate (colourless) is mixed with a solution of sodium chloride (colourless), a white precipitate of silver chloride is formed.



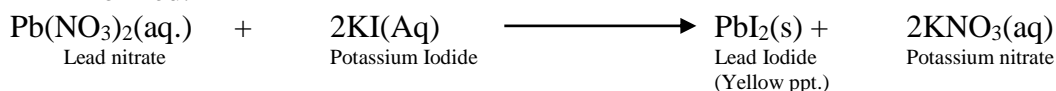
Similarly, when dilute sulphuric acid is added to a solution of barium chloride, a white precipitate of barium sulphate is formed.



When hydrogen sulphide gas is passed into the blue solution of copper sulphate, a black precipitate of copper sulphide is formed.



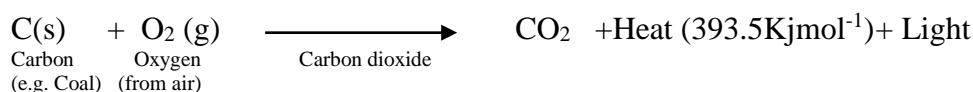
- When potassium iodide is added to solution of lead nitrate, yellow precipitate of lead iodide is formed.



### Energy Change:

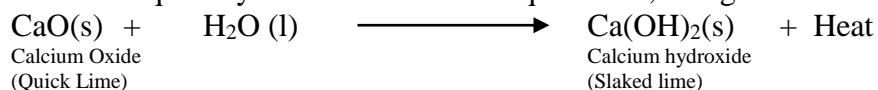
During a chemical change, energy is either evolved or absorbed. The energy evolved or absorbed may be in the form of heat, light, electricity, sound, etc.

- When coal (or carbon) is burnt, heat and light are produced.

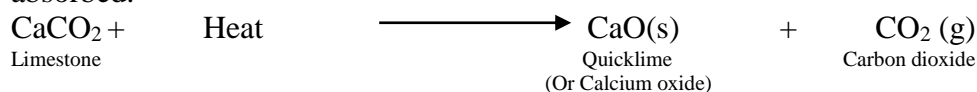


Burning of candle and LPG are also accompanied with the evolution of heat and light.

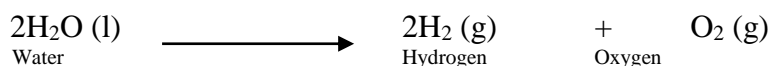
- When a small quantity of water is added to quicklime, a large amount of heat is evolved.



Limestone ( $\text{CaCO}_3$ ) is burnt to obtain Calcium oxide or quicklime. In the reaction, heat is absorbed.



**Change in state:-** Some chemical reactions are characterized by the change in state. To show the change in state, s(for solid), l(liquid), g(for gas) and aq(for aqueous) are written after their symbols or formulae. For example, electrolysis of water gives hydrogen and oxygen gases.

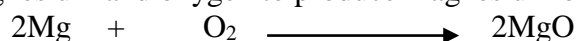


Similarly, when candle wax is burned, then water and carbon dioxide is formed.

### **CHEMICAL EQUATION**

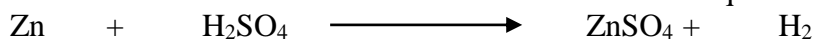
The chemical equation is a shorthand representation of a chemical reaction in terms of symbols and formulae of the substances involved is called a chemical equation.

It is a symbolic notation which uses the chemical formulae of the reactants and the products instead of words to represent a chemical reaction. The use of chemical formulae instead of words makes a chemical equation more concise, simple and useful. The chemical equation for the chemical reaction of magnesium and oxygen to produce magnesium oxide can be written as:



#### **Types of chemical equations**

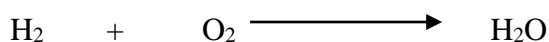
**Balanced chemical equation.** A balanced chemical equation is one which contains an equal number of atoms of each element on both sides of the equation e.g.



The atoms on R.H.S are equal to atoms on L.H.S

#### **Skeleton or unbalanced chemical equation:-**

An unbalanced chemical equation is one in which the number of atoms of elements on the sides of the equation is not the same e.g.



Atoms on L.H.S are not equal to atoms on R.H.S.

### Why we need to balance a chemical equation ?

The process by which the no. of atoms of each element on both sides is made equal is called balancing of chemical equation. A balanced chemical equation has the same number of each kind of atoms on both sides of the equation. This is called **material balancing**. The balancing of chemical equations is thus based on the law of conservation of mass. According to this law in an ordinary chemical reaction, we cannot create or destroy mass. This means atoms change partners to form other substances, but atoms do not disappear nor a new atom suddenly appears, i.e. atoms are conserved in a chemical reaction. Regarding the balancing of chemical equation two important points are:

- The correct formulae or symbol for each substance involved in the reaction must be known.
- None of the subscripts of the formulae can be changed in balancing the equation.

### Information is conveyed by a chemical equation

A chemical equation gives the following information:

- It gives symbols and formulae of the reactants and products.
- It tells us which substance or substances are taking part in the reaction and which product or products are being obtained.
- It gives the relative number of atoms and molecules of the reactants and products in the reaction.

### Limitations of a chemical equation

Following are the limitation of a chemical equation:

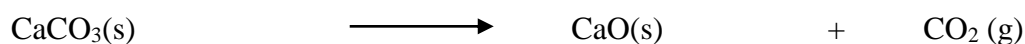
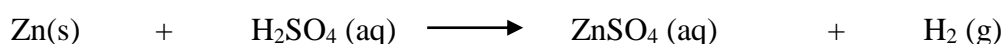
- A chemical equation does not indicate the physical state of the reactants and products i.e. it does not tell whether the substances involved in the reaction are solids, liquids or gases.
- It does not indicate the conditions of reaction, i.e. it gives no idea about the pressure, temperature, concentration, presence of catalyst etc. under which the reaction may occur.
- It does not indicate whether the reaction is fast or slow.
- Some reactants occur with explosion. This is not indicated by the chemical equation.
- It does not tell about the natural amount of the reactants consumed or products formed.

### How can a chemical equation be made more informative.

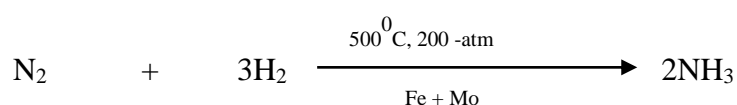
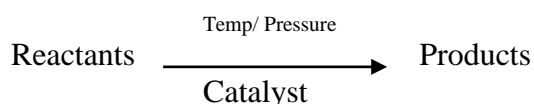
A chemical equation can be made more informative by adding additional information to the chemical equation. This is done as follows:

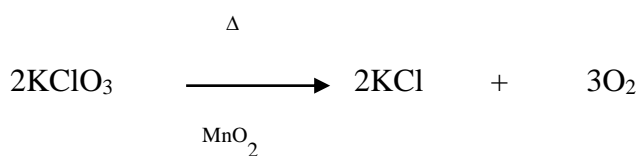
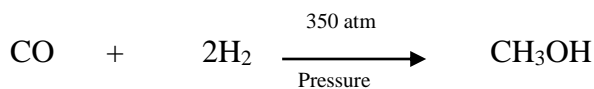
- The physical states of the reactants and the products are indicated by using symbols like, s, l, g and aq. in brackets after their symbols or formulae.

(s) stands for solid, (aq) for aqueous solution, (l) for liquid and (g) for gas.



- Specific reaction conditions of reaction are indicated over or below the arrow line. Thus,





3. If a gas is evolved in the reaction, it is shown by an upward arrow line ( $\uparrow$ ) after the product, e.g.



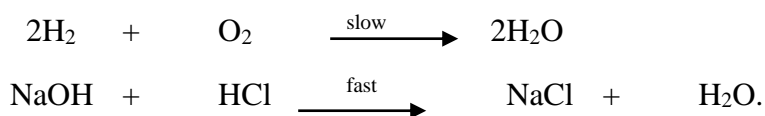
4. If a precipitate is formed, it is shown by downward arrow line ( $\downarrow$ ) after the product.



5. Evolution or absorption of heat during the reaction is shown by + heat for exothermic and – heat for endothermic on product side.



6. There are some reaction which are very slow whereas there are some reactions which are very fast. This is indicated by either writing ‘fast’ or ‘slow’ on the arrow.



### Steps for writing a chemical equation

For writing a chemical equation, the following points are kept in mind:

- The symbols and formulae of reacting substances are written on the left hand side with plus (+) sign between them.
- The symbols and formulae of various products are written on right hand side with plus (+) sign between them.
- An arrow sign ( $\rightarrow$ ) is put between reactants and products.

### Methods of balancing a chemical equation

Chemical Equations are balanced by adjusting the coefficients placed before the symbols or formulae of the reactants and products. There are three commonly used methods for balancing of chemical equation.

- Hit and trial Method
  - Partial Equation Method
  - Frequency Method
- i) **Hit and Trial Method:-** This method is also called trial and error method or inspection method. In this method, coefficients before the formulae or symbols of the reactants and products are

adjusted in such a way that the total number of atoms of each element on both the sides become equal . This is called Material Balance or Mass balance.

The following order is found helpful in the balancing of chemical equation by hit and trial method:

- a) Start balancing from the element (other than oxygen and hydrogen).
  - b) Balance oxygen.
  - c) Balance hydrogen
  - d) Check to be sure that the chemical equation is balanced.
- ii) **Partial Equation Method:-** Chemical Equation for the reactions in which many reactants and products are involved cannot be balanced easily by the hit and trial method. Such chemical equations are balanced by a method called partial equation method.

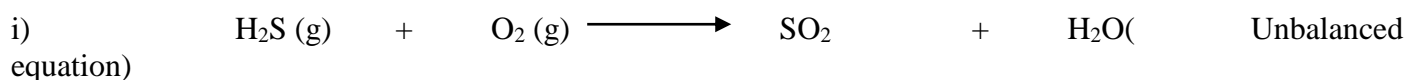
In this method, the overall reaction is assumed to take place through two or more simpler reactions. Each such reaction can be described by a simple chemical equation. Such simple chemical equations are called partial equations.( you will study in higher classes )

- iii) **Frequency Method:-** Frequency or the number of places at which an element occurs in a skeletal equation is the basis of this method.

The frequency of occurrence of various elements in an equation in short is called f-number.

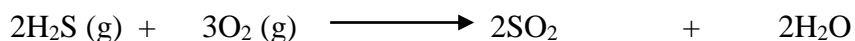
- While calculating the f- numbers of various elements, just count the number of places where the given element occurs.
- Start balancing equation from that element which has least frequency no.
- Other elements should be balanced in the order of increasing frequency numbers.
- If two or more elements have same frequency number, then balance the metallic element first.
- If there are two or more metallic elements with same frequency number, balance the metal with highest atomic number first. Then balance the next metallic element with lower atomic number and so on.
- If there are two or more non-metallic elements with same frequency number, balance the non-metallic element with highest atomic number first. Other non –metallic element should be balanced in the decreasing order of atomic numbers.

**Few Examples Of Balancing The Chemical Reaction According To The Hit And Trial Method:-**



Name of element	Reactant Side	Product Side
H	$2 \times 2 = 4$	$2 \times 2 = 4$
S	2	2
O	$3 \times 2 = 6$	6

[Since the atoms of oxygen on the reactant side and the product side are even and odd respectively. So, multiply the whole chemical equation by 2 except O<sub>2</sub>]



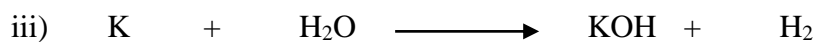
This equation is balanced now.



Name of element	L.H.S	R.H.S
Ba	3	3
Cl	6	6
Al	2	2
S	3	3
O	12	12

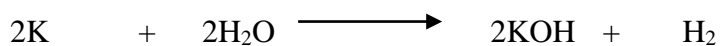


This equation is balanced now.

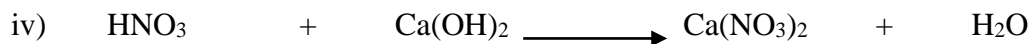


Name of element	L.H.S	R.H.S
K	12	12
H	24	34
O	12	12

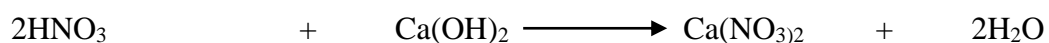
[Multiply the whole equation by 2 leaving H<sub>2</sub> due to odd and even distribution of atoms of hydrogen]



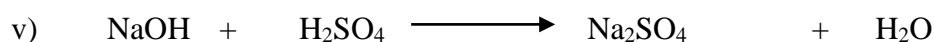
This equation is balanced now.



Name of element	L.H.S	R.H.S
H	4	4
N	2	2
O	8	8
Ca	1	1



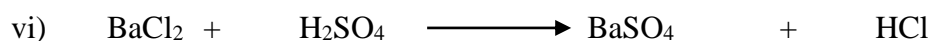
This equation is balanced now.



Name of element	L.H.S	R.H.S
Na	2	2
O	6	6
H	4	4
S	1	1



This equation is balanced now.

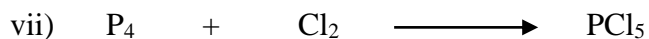


Name of element	L.H.S	R.H.S
Ba	1	1
Cl	2	2
H	2	2
S	1	1
O	4	4

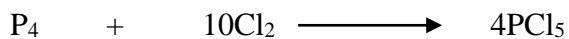




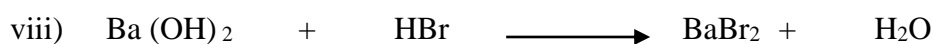
This equation is balanced now.



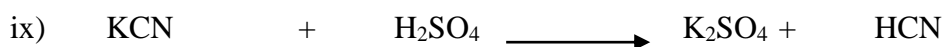
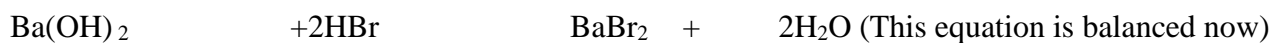
Name of element	L.H.S	R.H.S
P	4	4
Cl	20	20



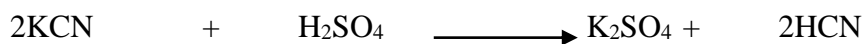
This equation is balanced now.



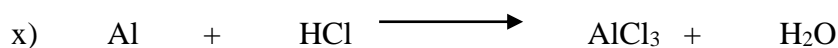
Name of element	L.H.S	R.H.S
Ba	1	1
O	2	2
H	4	4
Br	2	2



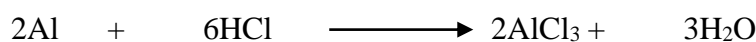
Name of element	L.H.S	R.H.S
K	2	2
CN	2	2
H	2	2
S	1	1
O	4	4



This equation is balanced now.



Name of element	L.H.S	R.H.S
Al	2	2
H	6	6
Cl	6	6



[Multiply e.g. by 2 except H<sub>2</sub> to remove odd, even, difference between the atoms of hydrogen.]

This equation is balanced now.

**Balancing By Frequency Method:-** The frequency of occurrence of various elements in an equation is called frequency number. E.g. In  $\text{KNO}_3$   $\text{KNO}_2 + \text{O}_2$

frequency of K=2, frequency of Oxygen =3, Frequency of N=2

### **Rules for balancing a chemical equation**

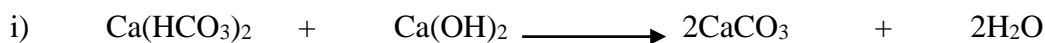
1. Write frequency numbers of all the elements in chemical equation.
2. Start balancing equation from that element which has least frequency no.
3. Other element should be balanced in the order of increasing frequency no.
4. If two or more elements have same frequency no. then balance metallic element first
5. If there are two or more metallic elements with same frequency number, balance the metal with highest at. no. first. Then balance the next metallic elements with low atomic nos.
6. If there are two or more non-metallic elements, with same frequency number, balance the non-metallic element with highest atomic number first. Other non-metallic element should be balanced in the decreasing order of atomic numbers.

### **Examples of finding frequency number:-**



Elements	Ca	H	C	O
f.no	3	3	2	4
	2 <sup>nd</sup>	3 <sup>rd</sup>	1 <sup>st</sup>	4 <sup>th</sup>

- We balance Carbon first because of the least frequency no.
- Among Ca & H, we balance Ca first because of its metallic nature.
- Finally balance O.



This eq. is balanced.

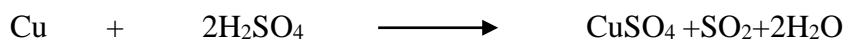


<b>Element</b>	Al	C	O	H	N
<b>Frequency number</b>	2	2	5	2	2
<b>Order of balancing</b>	1 <sup>st</sup>	3 <sup>rd</sup>	5 <sup>th</sup>	4 <sup>th</sup>	2 <sup>nd</sup>

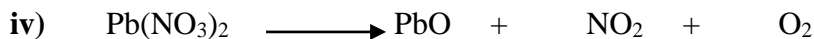
Thus the equation is balanced as  $\text{Al}_2(\text{CO}_3)_3 + 6\text{HNO}_3 \longrightarrow 2\text{Al}(\text{NO}_3)_3 + 3\text{CO}_2 + 3\text{H}_2\text{O}$



<b>Element</b>	Cu	S	H	O
<b>Frequency No.</b>	2	3	2	4
<b>Order of balancing</b>	1 <sup>st</sup>	3 <sup>rd</sup>	2 <sup>nd</sup>	4 <sup>th</sup>



This eq. is balanced



<b>Element</b>	Pb	N	O
<b>f.no</b>	2	2	4
<b>Order of balancing</b>	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>

[Multiply whole eq. by 2]



This eq. is balanced.



<b>Element</b>	K	Cr	H	S	O
<b>f.no.</b>	2	2	2	2	6
<b>Order of balancing</b>	2 <sup>nd</sup>	1 <sup>st</sup>	4 <sup>th</sup>	3 <sup>rd</sup>	5 <sup>th</sup>

[Multiply the eq. by 2]

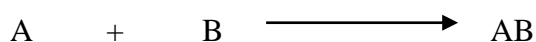


This eq. is balanced

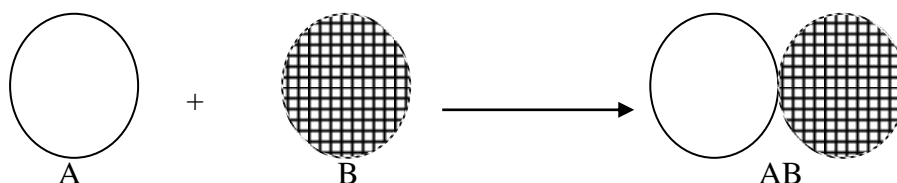
### VARIOUS TYPES OF CHEMICAL REACTIONS

Chemical reactions are categorized on the basis of chemical changes which occur in them. Chemical reactions are of various types such as combination reaction, decomposition reaction, displacement reaction, double displacement reaction and oxidation and reduction reactions (redox reaction)

1. **Combination reaction:** - In this type of chemical reaction, two or more elements or compounds join together through chemical bonds to form a single substance. A reaction of this type may be represented generally as

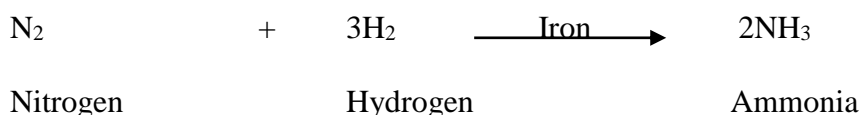


Pictorially, this can be represented as

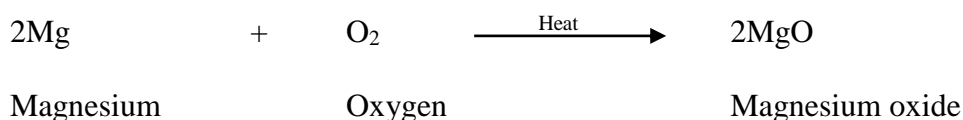


#### Examples:-

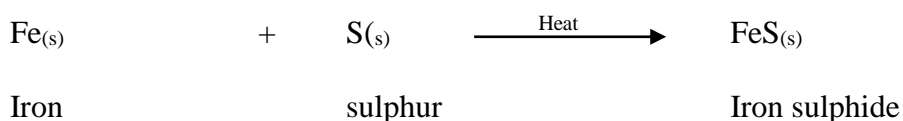
1. Nitrogen reacts with hydrogen at high pressure in the presence of iron catalyst to form ammonia. This is called Haber's process.



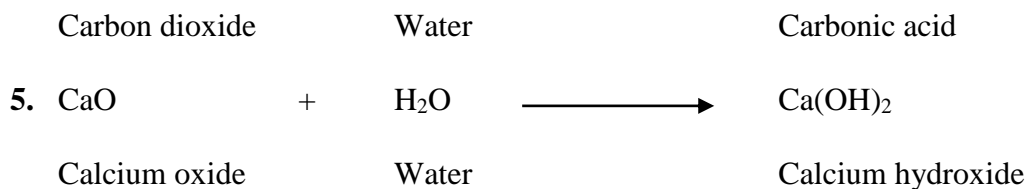
2. Magnesium reacts with oxygen on heating to form magnesium oxide.



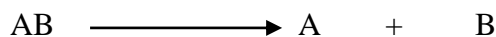
3. When iron is heated with sulphur, iron sulphide is formed.



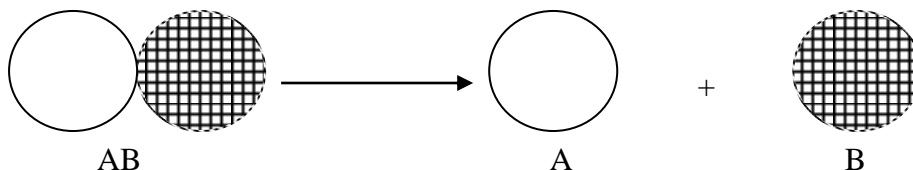
4.  $\text{CO}_2 + \text{H}_2\text{O} \longrightarrow \text{H}_2\text{CO}_3$



**Decomposition reaction:-** It is a chemical change during which a compound breaks down to give two or more substances. This reaction may be represented generally as

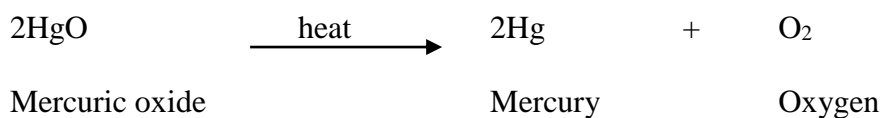


Pictorially, this can be represented as

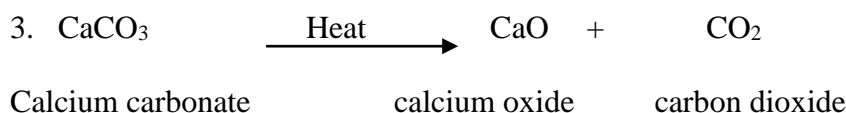
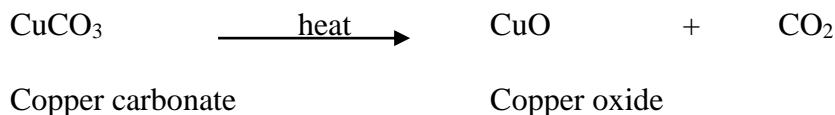


**Some examples of decomposition reaction are as follows:-**

1. Mercuric oxide on heating above 300<sup>0</sup>C decomposes to form its respective metal and oxygen gas.



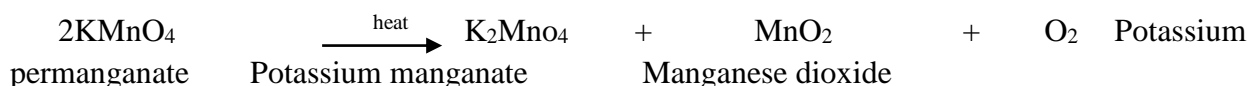
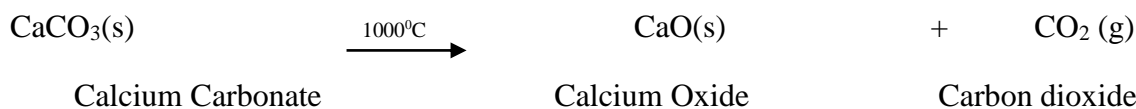
2. When copper carbonate is heated, it decomposes into copper oxide and carbon dioxide.



**Decomposition reaction may be further classified as.**

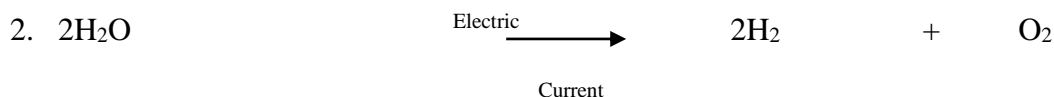
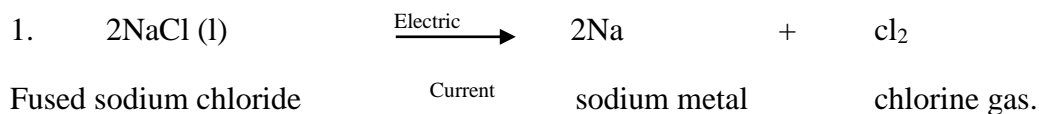
a. **Thermal decomposition:-** This is also known as pyrolysis . In this, a chemical compound is broken down by heat

**Example,**



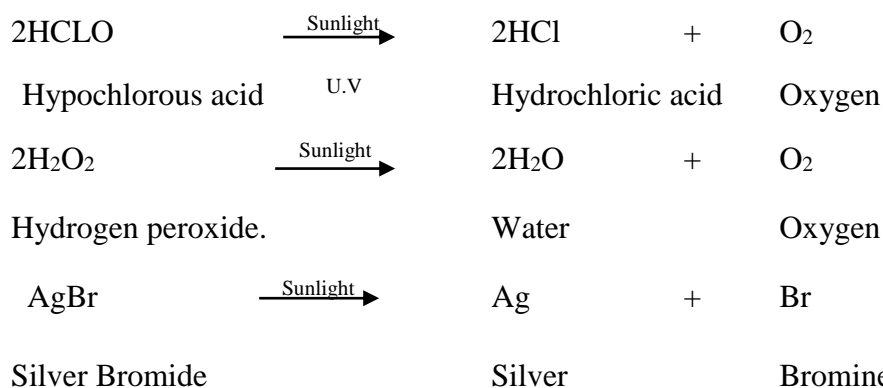
**b. Electrolytic decomposition:-** This is also called electrolysis. This is a process in which a chemical compound, in the molten state or in aqueous solution, is decomposed by the passage of electricity.

**Example,**



**c. Photolytic decomposition:** - This is the breaking up of a compound brought about by light.

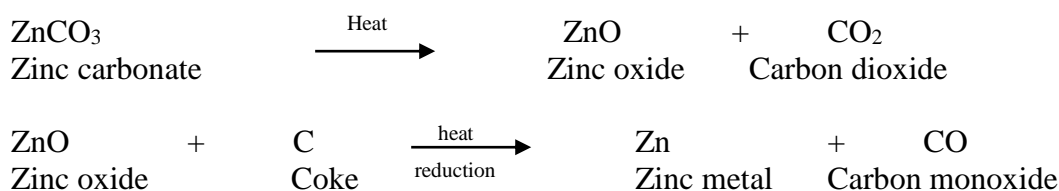
**Example**



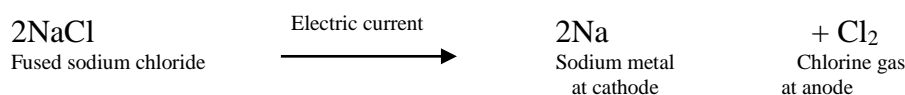
This reaction is used in photography

**Uses of decomposition reactions**

1. Thermal decomposition reactions are used in the extraction of less active metals from their ores .



2. Electrolytic decomposition is used in the extraction of more active metals from their fused ionic compounds.



**Decomposition reactions in our body:-** Food which we eat consists of highly complex organic compounds such as carbohydrates, fats and proteins. These compounds are broken down in our digestive system. For example, the carbohydrates and fats break down to form simple substances like glucose and fructose. Similarly, the proteins break down to amino acids.



**Activity Series:-** The activity series is an arrangement of elements in the decreasing order of the electropositive character. The activity series of metals is given in below

Potassium (K)

Sodium (Na)

Calcium (Ca)

Magnesium (Mg)

Aluminium (Al)

Zinc (Zn)

Iron (Fe)

Tin (Sn)

Lead (Pb)

Hydrogen (H)

Copper (Cu)

Mercury (Hg)

Silver (Ag)

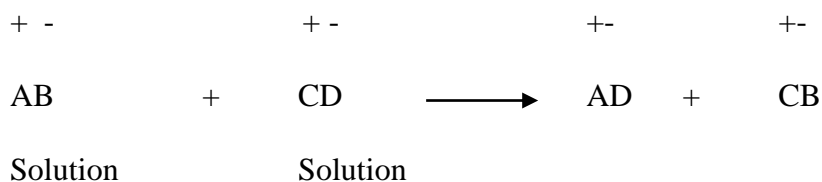
Gold (Au)

Platinum (Pt)

Decreasing Metal Reactivity

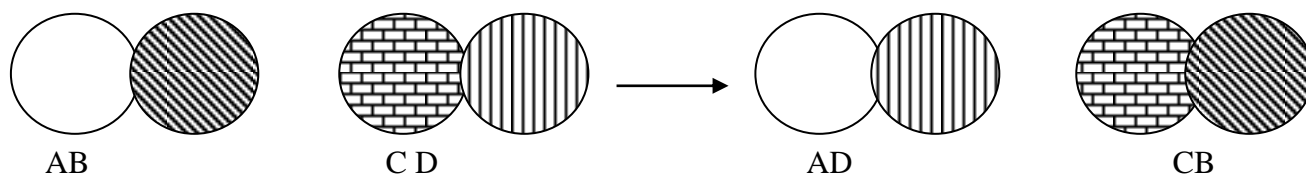
### **Double Displacement Reactions:-**

A chemical reaction in which two ionic compounds in their aqueous solutions react by exchanging their ions/ radicals to form two new compounds is called double displacement reaction. It is also called partner exchange reaction. It can be represented as



This may be pictorially represented as



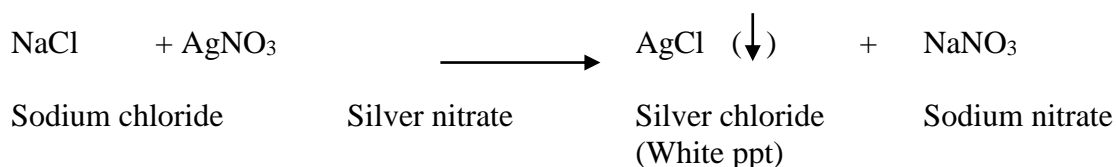


**These reactions are of two types:**

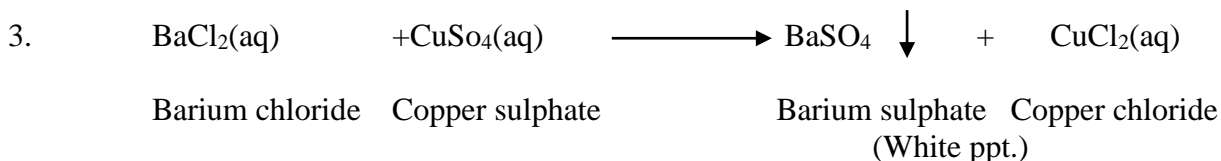
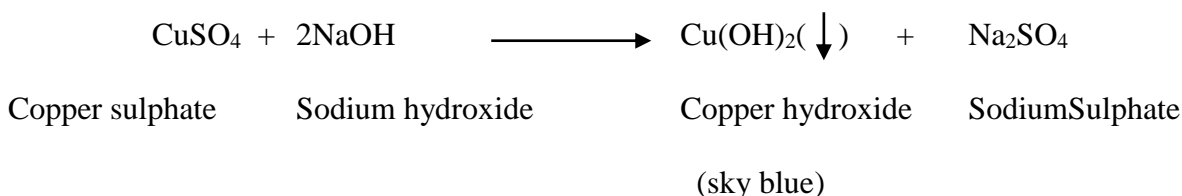
**Precipitation reactions:** - In these reactions, two compounds react in their aqueous state to form an insoluble product which appears in the form of a precipitate.

Some examples of precipitation reaction are given below:

1. Aqueous sodium chloride and silver nitrate react to form a white precipitate of silver chloride.



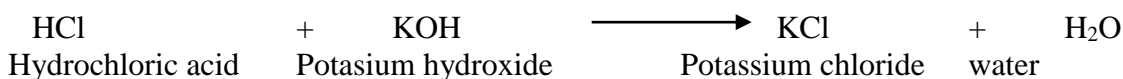
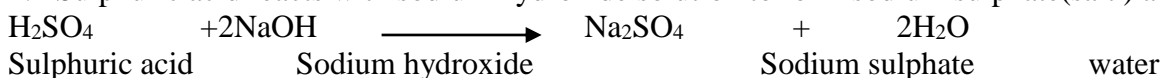
2. Aqueous copper sulphate and sodium hydroxide react to form a blue precipitate of copper hydroxide



**Neutralization reactions:-** In these reactions an acid reacts with a base ; by exchanging their radicals, to form salt and water only.

Some examples are given below:

1. Sulphuric acid reacts with sodium hydroxide solution to form sodium sulphate(salt ) and water.

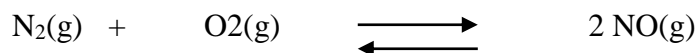


**Reversible reactions:-** These reactions which do not go completely from the reactants towards the products

because the products too react among themselves to regenerate the reactants.

After sometimes, a reversible reaction comes to a state of equilibrium in which the forward and backward reactions take place at the same speed and the amounts of the amounts of the compounds remain unchanged.

### Examples:



### **REDOX REACTION- Oxidation and reduction reaction**

Reactions in which both oxidation and reduction takes place are called redox reactions

**Oxidation and reduction reactions:-** According to the earlier concept, the oxidation of a substance takes place when:

1. There is addition of oxygen to a substance.
2. There is addition of a non metal to a substance.
3. There is removal of hydrogen from a substance.
4. There is removal of metal from a substance.

**Oxidising agents:-** The substance is an oxidizing agent if :

1. It supplies oxygen from oxidation.
2. It supplies a non metal from oxidation.
3. It removes hydrogen from another substance.
4. It removes metal from another substance.

**Reduction:-** The reduction of a substance takes place when;

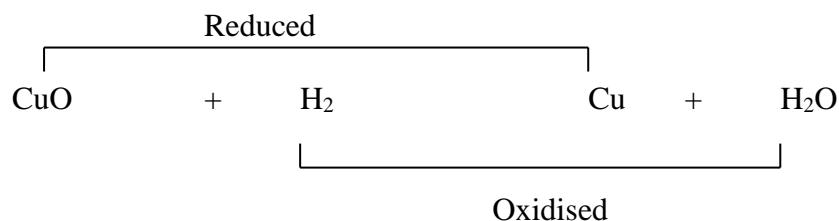
1. There is addition of hydrogen to a substance.
2. There is addition of metal to a substance.
3. There is removal of oxygen from a substance.
4. There is removal of non metal from a substance.

**Reducing agent:-** The substances is a reducing agent if;

1. It supplies hydrogen for reduction.
2. It supplies metal for reduction.
3. It removes oxygen from another substance.
4. It removes non metal from another substance.

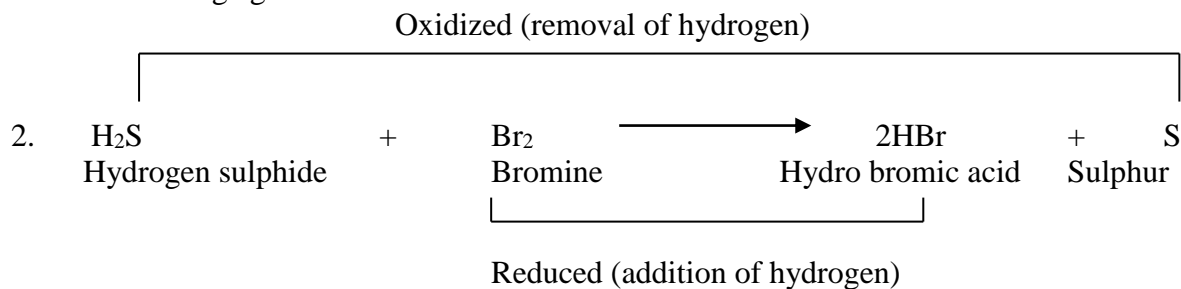
### **Example;**

1. When hydrogen gas is passed over heated copper oxide, the copper metal and water are formed.

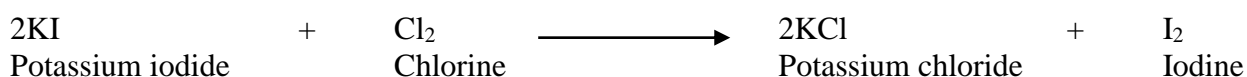


In this, removal of oxygen takes place from copper oxide. So, copper oxide is reduced to copper. Similarly, addition of oxygen takes place in hydrogen. So, hydrogen is oxidized to water.

In the above reaction, hydrogen removes oxygen from copper oxide; therefore, hydrogen is a reducing agent. Moreover, copper oxide is the supplier of oxygen; therefore copper oxide is an oxidizing agent.



1. When chlorine gas is passed through potassium iodide solution, it forms potassium chloride and iodine.



In the above reaction, potassium metal is removed from potassium iodide; therefore, potassium iodide is oxidized to iodine. Also, the addition of potassium metal takes place in chlorine. Therefore, chlorine is reduced to potassium chloride.

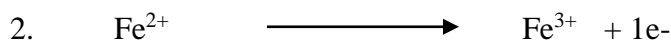
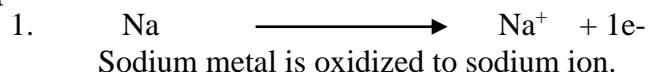
Moreover, potassium iodide supplies metallic element potassium, therefore it is a reducing agent.

Chlorine removes metallic element potassium from potassium iodide; therefore it is an oxidizing agent.

### Electronic concept of oxidation and reduction:-

**Oxidation:-** When an atom or an ion loses an electron /electrons, the oxidation is said to take place.

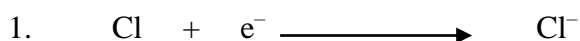
#### Examples:-



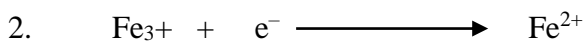
Ferrous ion is oxidized to ferric ion.

**Reduction:-** when an atom or an ion gains an electron/electrons, the reduction is said to taken place.

#### Examples:-



Chlorine atom is reduced to chlorine ion.

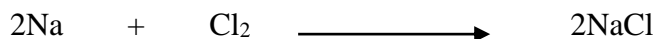


Ferric ion is reduced to ferrous ion.

**Redox Reaction:-** A Chemical reaction in which loss of electrons and gain of electrons takes place simultaneously is called redox reaction.

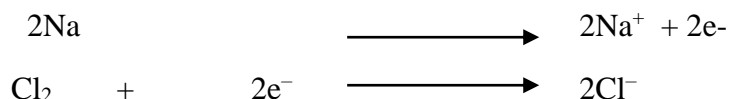
**Example:-**

Sodium metal reacts with chlorine to form sodium chloride.



Sodium            chlorine                    sodium chloride.

The reaction can be written as,



In this sodium metal is oxidized to sodium ion and chlorine is reduced to chlorine ion.

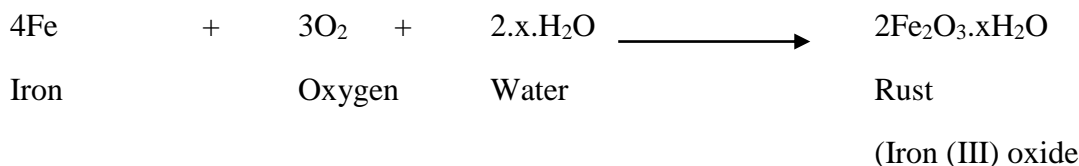
**Effects of oxidation reactions in everyday life.**

Ans. There are two common effects of oxidation reactions which we observe in our daily life are:

- i) Corrosion of metals            ii) Rancidity of food.

**Corrosion :-** Is the process in which metals are eaten up gradually by the action of air, moisture or a chemical on their surface.

Rusting of iron metal is the most common form of corrosion. In this, iron metal is oxidized by the oxygen of air in the presence of moisture to form hydrated iron (III) oxide called rust.



The no. of water molecules (x) in the rust varies. Rust is a soft and porous substance which gradually falls off from the surface of an iron object and hence weakens and eats up the whole iron object.

## Rancidity

Fresh food containing fats and oils smells and tastes pleasant. But when it becomes stale on long exposure to air, it smells/tastes unpleasant and is no longer fresh. It is said that the food has become rancid. This change in the food is due to oxidation of fats and oils. Butter, ghee, boiled rice, etc, become rancid after prolonged exposure to air.

Food materials can be protected from being stale by keeping them out of contact with water/moisture and air. This can be done in several ways.

- i) Some substances called antioxidants may be added to prevent oxidation of the food.
- (ii) Food materials may be kept at a very low temperature. In many homes refrigerators used to protect food from being oxidized.

(iii) Food may be preserved in airtight containers.

(iv) Chips (e.g potato chips) sold in the market come in packets filled with nitrogen gas.

## **FLAMES**

What is a flame?

We are all familiar with a flame. It has been defined in different ways.

1. A flame is a zone in which chemical combination between gases takes place accompanied by the evolution of heat and light.

2. A flame consists essentially of a mass of intensely ignited gaseous matter

3. A flame is the phenomenon produced at the surface where two gases meet and undergo combination with the evolution of heat and light.

There can be two kinds of flame.

(I) **Luminous flame:** A flame produced with the evolution of heat and light is called a luminous flame.

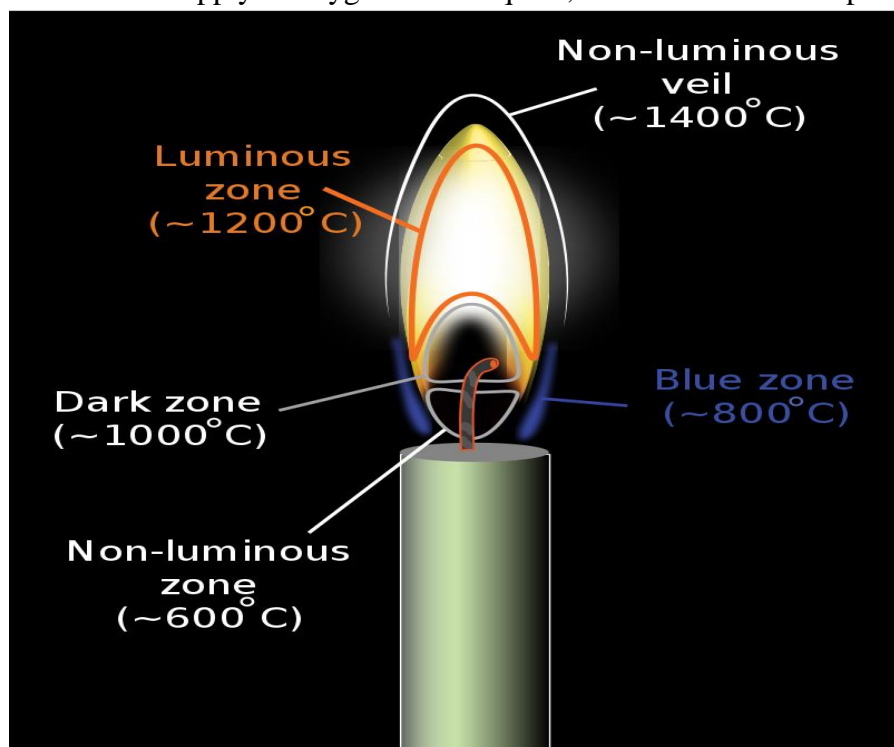
(II) **Non-luminous flame:** A flame produced with the evolution of heat and very little light is called a non-luminous flame.

There are many cases of burning in which no flame is produced. For example, charcoal burns in air with the production of heat and light but practically without any flame. Iron burns in oxygen with scintillation but without any flame.

Note: 1. A burning solid does not produce flame unless vapour is produced. Only those solid or liquid fuels which produce vapour on heating, burn with a flame. For example, kerosene is a liquid fuel. It vaporizes on heating. So, it burns with a flame

2. When the supply of oxygen is sufficient, the fuel burns completely, producing a blue flame. A blue flame does not produce much light, hence it is a non-luminous flame.

3. When the supply of oxygen is inadequate, the fuel burns incompletely, producing a yellow flame.



### The candle flame

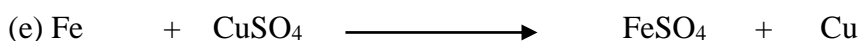
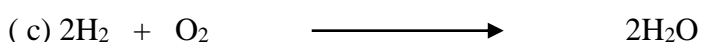
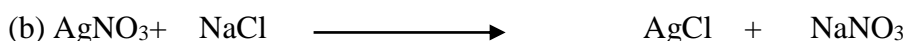
The inflammable matter in a candle is wax. The wax consists of solid compounds of carbon and hydrogen (or of hydrocarbons). When a candle is lighted, the wax melts and goes up into the wick and is converted into vapour. The vapour burns producing the candle flame. The flame of candle is yellow and luminous. The yellow colour of the candle flame is due to the unburnt carbon particles present in the flame on account of incomplete combustion of wax in inadequate supply of oxygen.

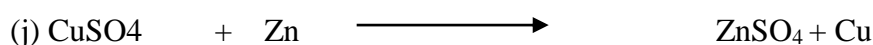
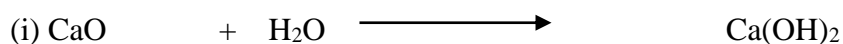
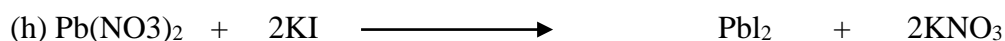
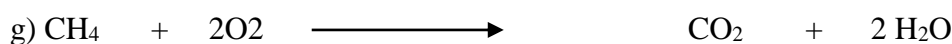
### Why a burning candle gives out light

A burning candle gives out light, i.e., it is luminous. This is chiefly because solid particles of carbon are present in the flame and they become incandescent when the candle burns.

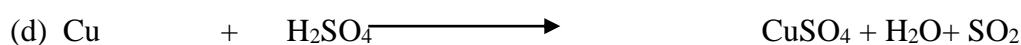
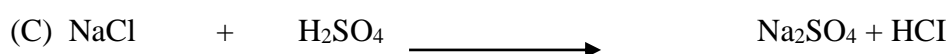
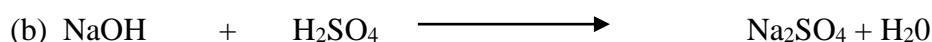
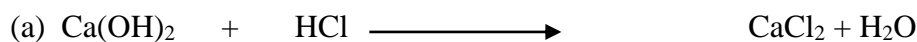
### ASSIGNMENT

1. What type of reactions are represented by the following equations?

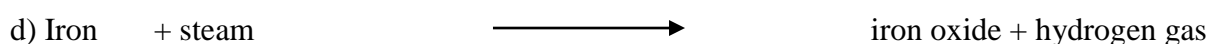
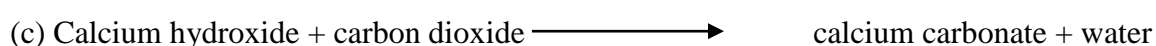
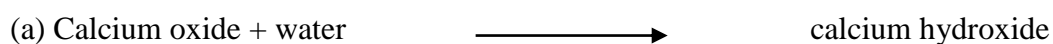




2. Balance the following equations:



3. Give balanced chemical equations for the following reactions:



4. How would you show that silver is chemically less reactive than copper?

5. When an iron rod is dipped in a solution of copper sulphate, a redox reaction occurs:



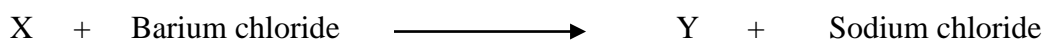
i) Which one is reduced and which one is oxidized?

(ii) Which one is the oxidizing agent.

6. Describe oxidation and reduction in terms of gain or loss of oxygen. Give suitable example.

7. Giving suitable examples differentiate between single displacement and double displacement reactions.

8. Consider the following chemical reaction



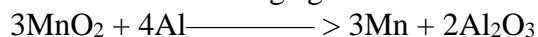
(White ppt)

(a) Identify 'X' and 'Y'

(b) The type of reaction

(a) 'X' is  $\text{Na}_2\text{SO}_4$  and Y is  $\text{BaSO}_4$ .

9. Name the reducing agent in the following reaction:



State which is more reactive, Mn or Al and why?

10. Write the chemical equation of the reaction in which the following changes have taken place with an example of each:

- (i) Change in colour
- (ii) Change in temperature
- (iii) Formation of precipitate

11. Which products will be obtained when lead nitrate is heated simply. Write balanced chemical equation for the reaction? State the type of chemical reaction that occur in the change.

12. Describe an activity to observe what happens when quick lime is added to water taken in a beaker. State two important observations and name the type of reaction taking place.

13. Why does the colour of copper sulphate solution change when an iron nail is dipped in it? Write two observations.

14. Translate the following statement into chemical equation and then balance it.

Barium chloride reacts with aluminium sulphate to give aluminium chloride and a precipitate of barium sulphate. State the two types in which this reaction can be classified.

15. A zinc plate was put into a solution of copper sulphate kept in a glass container. It was found that blue colour of the solution gets fader and fader with the passage of time. After few days, when zinc plate was taken out of the solution, a number of holes were observed on it.

- (i) State the reason for changes observed on the zinc plate.
- (ii) Write the chemical equation for the reaction involved.

16. You might have noted that when copper powder is heated in a china dish, the surface of copper powder becomes coated with a black colour substance.

- (i) How has this black coloured substance formed?
- (ii) What is that black substance?
- (iii) Write the chemical equation of the reaction that takes place.

17. 2g of ferrous sulphate crystals are heated in a dry boiling tube .

- i) List any two observations you notice while performing the activity .
- ii) Name the type of chemical reaction taking place.
- iii) Write down the chemical equation for the reaction.





## DOON INTERNATIONAL SCHOOL, SRINAGAR

SUBJECT: S.ST

ASSIGNMENT: I

GRADE: X

### CHAPTER: Nationalism in India.

#### **Instructions:**

- Students are to read & understand the chapter on their own before initiating to respond to the given assignment.
- The objective of this assignment is to make the students acquainted with;
  1. Idea of Satyagraha.
  2. Rise of National Movements.
  3. Rowlatt Act.
  4. Jallianwala Bagh Massacre.
  5. Non Cooperation Movement.
  6. Swadeshi Movement.
  7. Khilafat Movement.
  8. Civil Disobedience Movement.

#### **TERMS TO KNOW**

- **Begar**: Labour that villagers were forced to contribute without any payment.
- **Forced Recruitment**: A process by which the colonial state forced people to join the army.
- **Rowlatt act**: It was the Act which gave the govt. enormous power to repress political activities.

It allowed that govt. could arrest anybody without a trial for two years.

- **Jallianwala Bagh Massacre**: This massacre is also known as Amritsar Massacre, took place in 13 April 1919 when troops of the British Indian Army under the command of Colonel Reginald Dyer fired rifles into a crowd of Baisakhi pilgrims, who had gathered in Jallianwala Bagh, Amritsar, Punjab.
- **Non-Cooperation Movement**: Began in Jan 1921. The main aim of this movement was not to cooperate with the British made goods. It included surrendering of govt. titles, boycott of civil

services, army, police, courts & legislative councils, schools, & foreign goods, & a full civil disobedience campaign would be launched.

- **Swadeshi:** This movement involved boycotting British products & the revival of domestic made products & production technique.
- **Boycott:** It is a form of consumer activism involving the act of voluntarily abstaining from using, buying or dealing with a person, organization or country as an expression of protest usually for political reason.
- **Picket:** A form of demonstration or protest by which people block the entrance to a shop, factory or office.

### **The idea of satyagraha**

- Mahatma Gandhi returned to India in January, 1915. His heroic fight for the Indians in South Africa was well known. His novel method of mass agitation known as Satyagraha had yielded good results.
- The idea of Satyagraha emphasized the power of truth & the need to search for truth. In 1916, Gandhi travelled to Champaran in Bihar to inspire the peasants to struggle against the oppressive plantation system.
- Mahatma Gandhi advocated a novel method of truth of mass agitation: called Satyagraha. This method was based on the idea that if someone is fighting for a true cause, there is no need to take recourse to physical force to fight the oppressor. Gandhiji believed that a satyagrahi could win a battle through non-violence, i.e. without being aggressive or revengeful.

### **Some early Satyagraha movement organized by Gandhiji:**

- IPeasants' Movement in Champaran (Bihar) in 1916.
- IPeasants' Movement in Kheda District (Gujarat) in 1917.
- IMill workers' Movement in Ahmedabad in 1918.

### **The Rowlatt Act (1919)**

- The Rowlatt act was passed by the imperial Legislative Council in 1919. The Indian members didn't support the Act, but it was passed; nevertheless. The Act gave enormous powers to the govt. to repress political activities. It allowed detention of political prisoners without trial for two years.
- On 6<sup>th</sup> April, 1919: Gandhiji launched a national wide Satyagraha against the proposed Rowlatt Act. The call of strike on 6<sup>th</sup> April got huge response, people came out in support in various cities, shops were shut down and workers in railway workshops went on strike. The British administration decided to clamp down on the nationalists. Several local leaders were arrested. Mahatma Gandhi was barred from entering Delhi.

### **Jallianwalla Bagh**

- On 10<sup>th</sup> April 1919, in Amritsar, the police fired upon a peaceful procession. This provoked widespread attacks on the govt. establishments. Martial law was imposed in Amritsar & the command of the area was given to General Dyer.

- The infamous Jallianwala Bagh Massacre took place on 13<sup>th</sup> April, the day on which Baisakhi is celebrated in Punjab. A crowd of villagers came to participate in a fair in Jallianwala Bagh. This was enclosed from all sides with narrow entry points.
- General Dyer blocked the exit points & opened fire on the crowd. Hundreds of people were killed in the incident. Public reaction to the incident took a violent turn in many north Indian towns.
- The govt. was quite brutal in its response. Things took highly violent turn. Mahatma Gandhi called off the movement as he did not want violence to continue.

### **Khilafat Movement**

The Khilafat issue gave Mahatma Gandhi an opportunity to bring the Hindus & Muslims on a common platform. The Ottoman Turkey was badly defeated in the First World war. There were rumors about a harsh peace treaty likely to be imposed on the Ottoman emperor, who was the spiritual head of the Islamic world (the Khalifa). A Khilafat committee was formed in Bombay in March 1919 to defend the Khalifa. This committee had leaders like the brothers Muhammad Ali & Shaukat Ali. They also wanted Mahatma Gandhi to take up the cause to build a united mass action. At the Calcutta session of the congress in September 1919., the resolution was passed to launch a Non-Cooperation movement in support of khalifat and also for Swaraj.

### **Non-Cooperation Movement**

In his famous book Hind Swaraj (1909), Mahatma Gandhi declared that British rule was established in India with the cooperation of Indians, and had survived only because of this cooperation. If Indians refused to cooperate, British rule in India would collapse within a year, & swaraj would come. Gandhiji believed that if Indians begin to refuse to cooperate, the British rulers would have no other way than to leave India.

### **Answer these questions.**

Q1: Name a leader of the Dalits & the association formed by him.

Q2: By whom was the first image of Bharat Mata painted?

Q3: Why had Congress ignored the Dalits for long?

Q4: What is meant by the idea of Satyagraha?

Q5: Which Muslim leader was willing to give up the demand for Separate electorates? Justify your answer with reasons.

Q6: What did Mahatma Gandhi mean when he said Satyagraha is an active resistance? Support your answer with suitable examples.

Q7: Discuss the salt March to make clear why it was an effective symbol of resistance against Colonialism?

Q8: Why Indians were outraged by the Rowlatt Act? Justify the Statement with suitable reasons.

Q9: Write a newspaper report on:

- (a) The Jallianwala Bagh Massacre.
- (b) The Simon Commission.

Q10: Why was Khilafat committee formed in 1919?

Q11: What were the Khilafat and the Non-Cooperation movements?

Name the important leaders of Khilafat & Non-Cooperation movement?

Q12: How did Non-Cooperation Movement become a movement? Explain it.

**Write down all question answers on your fair notebook.**

***Note: For more knowledge & information go through references of Arihant, S. Chand & Dr. Agarwal.***



## DOON INTERNATIONAL SCHOOL, SRINAGAR

### SUBJECT - Information technology

#### Assignment: I

#### Grade: X

#### Chapter: - Web Applications (Basic)

##### **Instructions:**

- Students are to read and understand the chapter on their own before initiating to respond to the given assignment.
- The objective of this assignment is to make students get acquainted with the factors that helps in knowing the computer network , topologies, accessibility options and OSI model.
- Threats and Security issues.

##### **Introduction**

Computer networks are classified on the basis of geography as well as roles of the components.

##### **On the basis of geography, networks are classified as follows:**

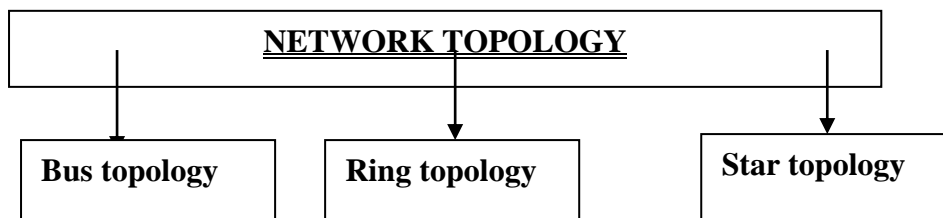
1. **Local Area Network (LAN):** LAN is a localized network. This type of network is useful when you want to connect two different departments in a building.
2. **Metropolitan Area Network (MAN):** MAN is a bigger version of LAN. MAN covers a larger area than LAN, but smaller than WAN. MAN generally connects two or more LANs or Campus Area Networks (CANs).
3. **Wide Area Network (WAN):** WAN is a type of network used to cover a wide geographical area or region. It links different metropolitan cities, countries and national boundaries.

##### **On the basis of component role, networks are classified as follows:**

1. **Peer-to-peer network:** In this type of network, all the connected computers are equal, i.e., none of the computers is the sole in-charge of the operations of the network.
2. **Server-based network:** This type of network provides greater security and centralized control where a dedicated server controls all the network operations.
3. **Client--based network:** This is a more refined server-based network which employs the processing power of a client workstation to execute some functions locally and requesting further processing from the server.

##### **NETWORK TOPOLOGY**

Network topology refers to the basic geometric layout according to which the server and clients are connected via a channel.



**Bus topology** :-The Bus topology is most commonly used in LANs where in the server, clients, and shared resources are all directly connected to a single common channel known as the bus. The channel runs through the network from one end to another.

**Ring topology** In the Ring topology, all the computers are connected in a large closed-loop circuit so that each computer is linked to two adjacent computers on either side. In this topology, the message sent by a sender is received by every client in the network; however, the message can only be read by the receiver to whom it is addressed.

**Star topology**:-In the Star topology, all clients are individually connected to a centrally located server via a direct channel. This topology was commonly used with the mainframe computers. The entire communication over the network takes place through the central server.

### Advantages Of Networking:

**Communication:** Interconnected computers can communicate with each other using special technologies.

**Data sharing:** Interconnected computers can share data over the Internet easily and quickly.

**Resource sharing:** Interconnected computers can share hardware devices such as a color printer.

**Internet access sharing:** All the interconnected computers can share a common high-speed Internet connection by sharing the bandwidth.

**Data security:** A business network allows administered officials to share critical data of a company more securely.

**Performance enhancement:** In some cases, networking can ensure performance enhancement by sharing the computation modules between various networked computers.

### **Despite so many advantages, networking also involves some challenges and risks:**

**Setup Cost:** Setting up a network involves investing in software and hardware equipment, which is expensive.

**Administration Cost:** Networked computers require ongoing management and administration.

**Undesirable sharing:** Sometimes people may share undesirable data such as a virus that causes more harm than good.

**Undesirable behavior:** The ease of sharing with networking also allows people to misuse company resources by downloading illicit material.

**Data Security:** A network that is not properly secured may put critical shared data at risk. Hackers may target and misuse the unsecure data with unauthorized access.

### OSI Model.

The seven layers of the OSI model

Layer 7	Application layer
Layer 6	Presentation layer
Layer 5	Session layer
Layer 4	Transport layer
Layer 3	Network layer
Layer 2	Data Link layer
Layer 1	Physical layer

### ACCESSIBILITY FEATURES

## **Enlisted In The Ease Of Access Center In Windows 7.**

The basic accessibility features listed under the Explore all settings section on the Ease of Access Center are as follows:

**Use the computer without a display:** This feature is very useful for people who are unable to view things on the screen.

**Make the computer easier to use:** This feature lets you adjust various settings related to the display of the computer screen. It is useful for the people having eyesight problem.

**Use the computer without a mouse or keyboard:** This feature is useful for people who are not capable enough or have some kind of difficulty in using the keyboard or mouse.

**Make the mouse easier to use:** This feature is helpful in deciding the looks of a pointer on screen or making it appear larger on screen so that a person with a weak eyesight can see the pointer on screen.

**Make the keyboard easier to use:** This feature is useful for making the usage of keyboard easier for people who are experiencing difficulty in using the keyboard normally.

**Use text or visual alternatives for sounds:** This feature is helpful for those who cannot hear or face some kind of difficulty in hearing sounds clearly.

## **Start A Blog**

The following are the steps involved in creating a blog:

1. Type the address of the Web-hosting site in the Address bar of your Web browser. E.g. Wordpress.com
2. Click the Get Started button
3. Enter a site name for your blog.
4. Enter the Education in the “What will be your site” about text box.
5. Select the Offer education, training, or mentoring check box.
6. Click the Continue button.
7. Enter the domain for your site.
8. Click the Select button for selecting free domain.
9. Click the Start with free button to select a plan. The Create your account page appears.
10. Enter your email address, user name.
11. Enter a username.
12. Click the Continue button.
13. Follow the instructions as prompted.
14. Click the Add button besides Blog Posts option.
15. Enter the Title and Content for your Blog.
16. Click the Publish button.

## **Online Transaction Work**

Processing of payment takes place in two stages. This includes authorization for payment approval and settlement to transfer money to the receiver’s account. Authorization process involves the following steps:

A customer purchases an item on a website using a debit card or credit card.

The payment information is received by the payment gateway which encrypts the received data to ensure privacy and forwards the same to the payment processing system.

The payment processor sends a payment request to the issuing bank of the customer to ensure the customer has enough credit in his account to pay the bills.

The issuing bank responds with an approval or a denial.

The payment processor forwards the answer back to you confirming the approval of sale and informs the bank of the merchant to credit your account.

The entire authorization process executes in a few seconds. After authorization, the settlement process involves the following steps:

- The issuing bank of the cardholder transfers funds to the bank of the merchant which deposits the amount in the merchant's bank account.
- Funds are available to the merchant and you are notified with a credit account confirmation message.
- Sometimes the settlement process may take a couple of days for effective completion and payment transfer. In some cases, the bank may retain a partial amount called reserve in case the customer returns the purchased goods in future.

### **Potential Threats Affecting The Internet**

**Malicious software:** Malicious software, often called Malware, may disrupt the operations of your computer, gain access to your privacy information, and may gather sensitive data.

**Denial-of-Service Attack:** The DOS attack makes a computer's resources unavailable to the user.

**Phishing:** This attack targets online users to extract sensitive information, like username, password, or credit card information.

**Application Vulnerability:** Some applications that access user resources may have security vulnerabilities like flawed authentication checks and memory safety bugs.

**Some remedies for resolving the Internet security threats that may affect a computer system include:**

**Encryption:** In this method, the data is encoded in a manner so that it can only be read by an authorized user.

**Digital Signature:** The digital signatures help in authenticating the content by verifying the author, signature date, and signature time.

**Firewall:** A firewall serves as a barrier between the Internet and LAN.

**Antivirus Software:** These are security programs for protecting a programmable device from security threats that work by detecting and eliminating malware and viruses.

**On the basis of understanding of chapter answer the following questions:-**

1. How does an IM deal with an automatic sign-in issue?
2. Write a short note on instant messaging architecture.
3. How does instant messaging work?
4. Enlist some differences between server-based and client-based networks.
5. Write short note on
  - Trojan Horse
  - Worm



## دون انٹرنیشنل اسکول، سرینگر

☆ جماعت: وہم

☆ سبق: پانی کی آلودگی

☆ مضمون کا حصہ: اول

### مرکزی خیال:

صحت کا خیال رکھنا بہت ضروری ہے تاکہ ہم اپنے مستقبل میں کسی بھی بڑی مقام کو حاصل کر سکتے ہیں اور تباہی سے محفوظ رہیں۔  
جب ہم اپنے آس پاس کے ماحول کو صاف رکھیں چاہے وہ پانی ہو، ہوا ہو، زمین ہو، یا غذا ہو۔

### سبق کا خلاصہ:

پانی خدا کی دی گئی نعمتوں میں سے ایک بڑی نعمت اور عطیہ ہے مگر انسان کے طریقے، استعمال اور دیگر ضروریات اور وسائل کے استعمال نے اس نعمت کو بھی جان لیوا بنا دیا ہے۔ زندگی کی بنیادی ضروریات ہونے کے باوجود ہم اس پر خرچ کرنے سے گھبراتے ہیں۔ آج کی اس ترقی یافتہ دنیا کو خوراک کے مسائل میں سب سے بڑا مسئلہ پانی کا ہے۔ پانی کی آلودگی ہر طرح سے انسانی صحت اور جان کی دشمن ہے یہ نہ صرف انسانوں کے لیے بلکہ جانوروں اور پودوں کے لیے بھی خطرناک ثابت ہوتی ہے۔ جدید صنعتی دور نے پانی کی آلودگی کو بڑھانے میں کلیدی کردار ادا کیا ہے۔ دنیا میں فوت ہونے والوں میں سے اکثر گندے پانی کی وجہ سے لقمہ اجل بن جاتے ہیں۔

اس سبق میں اس بات پر روشنی ڈالی گئی ہے کہ ہم پانی کے ذخائر کو کس طرح آلودہ کرتے ہیں۔ تالابوں، نہروں میں کپڑے دھوئے جاتے ہیں اور مویشیوں کو نہلایا جاتا ہے اور خود انسان بھی اسی میں نہاتے ہیں اس طرح ساری گندگی تالابوں اور نہروں میں داخل ہوتی ہیں۔ اور پانی آلودہ ہوتا ہے۔ یہ صرف اس تک محدود نہیں ہے بلکہ گھروں سے نکلنے والا کوڑا، کارخانوں سے نکلنے والا میل کچیل اور کیڑے مار دواؤں کا چھڑکاؤ پانی کی آلودگی میں اضافہ کرتا ہے۔ یہ آلودہ پانی مختلف قسم کی بیماریوں کو جنم دیتا ہے۔ جیسے پچیس، قبض، پیٹ کا درد اور ہیضہ جیسی بیماری پھیل جاتی ہے۔

آلودہ پانی کو صاف کرنے یا پینے کے لائق بنانے کے لیے ہمیں اس کو خوب اُبالنا چاہیے اور پھر ٹھنڈا کر کے صاف برتن میں رکھیں جو شہ دیتے وقت پوٹاشیم پرمیگنیٹ ڈالنے سے جراثیم مرتجاتے ہیں۔

مختصر جوابات لکھیے:-

س۔ ۱۔ پانی کس طرح آلودہ ہو جاتا ہے؟

س ۲:- پانی کو صاف اور پینے کے لائق بنانے کے لیے ہمیں اس میں کیا ڈالنا چاہیے؟

س ۳:- پانی سے پھیلنے والی بیماریوں کے نام لکھیے۔

س ۴:- پانی کے ذخا کس طرح آلودہ ہوتے ہیں؟

س ۵:- پانی کی آلودگی کے بارے میں کوئی ایک نعرہ لکھیے (جیسے پانی کی آلودگی پورے جہان کی آلودگی)

س ۶:- جمع لکھیے۔ (قسم - ذرہ - خرابی - ذخیرہ - مکھی - قاعدہ)

تفصیلی جوابات لکھیے:

س ۱:- اس سبق کو اپنے الفاظ میں تحریر کیجیے۔

س ۲:- پانی کی آلودگی کے بارے میں اور لوگوں کی بیداری کے لیے ایک مقالہ افتتاحیہ لکھیے۔

س ۳:- اپنے آس پاس کے کسی نہر، تالاب یا چشمہ کے بارے میں معلومات درج کیجیے جو انسانوں کی سبب آلودہ ہوئی ہو۔

س ۴:- اپنے دوست کو ایک خط لکھیے جس میں اُسے 'پانی کی اہمیت' کے بارے میں موثر طریقے سے آگاہ کیجیے۔

اختتام



# DOON INTERNATIONAL SCHOOL, SRINAGAR

SUBJECT: Hindi

Assignment: I

Grade: X

## पाठ - दोहे

### १. व्याख्या प्रसंग सहित कीजिए ।

क. सोहत ओढे पीतु ----- परयो प्रभात ।

प्रसंग - प्रस्तुत दोहा कवि बिहारी दवारा रचित है । यह दोहे उनके प्रसिद्ध ग्रंथ सतसई से लिया गया है । इसमें उन्होंने कृष्ण जी के सौंदर्य का वर्णन किया है ।

व्याख्या - बिहारी कृष्ण जी के सौंदर्य का वर्णन करते हुए कहते हैं कि भगवान कृष्ण के सांवले शरीर पर पीले वस्त्र अत्यंत अच्छे लग रहे हैं । उन्हें देखकर ऐसा प्रतीत होता है मनो किसी नीलमणि पर्वत पर प्रातः काल की धूप पड़ रही हो । यंहा श्री कृष्ण के सांवले शरीर को नीलमणि पर्वत तथा पीले वस्त्रों को सूर्य की धूप के समान माना गया है ।

विशेष - श्री कृष्ण की शोभा का मनोहारी अंकन है ।

ख. कहलाने एकत बसत ----- दाघ- निदाघ

कवि कहते हैं कि किस प्रकार सापं, मोर, हिरण और बाघ एक स्थान पर इकट्ठे होते हैं । और इस प्रश्न का उत्तर स्वयं देते हैं । कि शायद इस कारण भयंकर गर्मी का होना है । भयंकर गर्मी के कारण सारा जंगल तपोवन के सम्मान हो गया है । जंहा के सभी जीव अपना वैर - भाव भूलाकर एक - साथ मिल - जुलकर रहते हैं ।

विशेष - गर्मी की भयंकरता का वर्णन है ।

ग. बतरस - लालच ----- नटि जाइ ।

इस दोहे में कवि कहते हैं कि एक गोपी कृष्ण जी की बांसुरी छुपा देती है । परंतु जब उसे कृष्ण जी पूछते हैं तो वह साफ इन्कार देती है । और वह यह सब उनसे प्रेम भरी बातचीत करने के लिए करती है । जब कृष्ण उसे तरह - तरह की कसमे डालते हैं तो मानने से इन्कार कर देती है और कृष्ण जी उस पर विश्वास कर लेते हैं परन्तु जब वह हसती है तो उन्हें शंका हो जाता है और वह उसे बसुरी वापस करने को कहते हैं ।

विशेष - कृष्ण जी के प्रति नायिका के प्रेम का चित्रांकन है ।

घ. कहत, नटत, रीझ ----- ही सब बात ।

कवि कहते हैं कि नायक कुछ दूर बैठी नायिका की ओर आंखों से संकेत करके कुछ कहता है परन्तु नायिका संकेत से इन्कार कर देती है नायिका के इन्कार करने का ढंग कुछ ऐसा था कि नायक मुग्ध हो गया ।

यह देख कर वह आपनी आंखों के इशारे से आपनी खीझ प्रकट करती है । उसकी यह खीझ बनावटी है । थोड़ी ही देर में जब उसकी आंखें मिलती हैं तो दोनों एक - दूसरे को देखकर खिल उठते हैं और लजा जाते हैं इस प्रकार भीड़ भरे घर में भी नायक - नायिका आंखों में बातचीत कर लेते हैं । घ के लोगों को कुछ पता नहीं चलता ।

ड. बैठी रही अति ----- चाहति छांह ।

नायिका नायक से कहती है कि जेठ मास की इस दोपहर में इतनी भयंकर गर्मी है कि छाया भी गर्मी से बचने के लिए छाया चाहती है । इसी कारण छाया या तो घने जंगल में है या घरों के भीतर छिपना चाहती है परन्तु गर्मी बहुत अधिक है जिस कारण गर्मी से घबराकर छाया भी छाया ढूंढ रही है ।

च. प्रगट भए दविजराज ----- केसवराइ ।

कवि कहते हैं कि हे कृष्ण । आप आपने चंद्रवंश में जन्म लिया है और आप आपनी इच्छा से ही ब्रज में आकर बस गए हैं । ब्रज में बसे हुए केशवराय रूपी केशव , मेरी आओअसे प्रार्थना है कि आप मेरे सभी सकटों ऊर दुःखों को दूर कर दो । भाव यह है कि आप सर्वशक्तिमान हैं अतः मेरे कष्टों का भी निवारण करें ।

छ. जपमाला , छापै , तिलक ----- राचै रामु \

कवि कहते हैं कि हाथों जाप करने की माला लेने से ईश्वर नाम के छपे वस्त्र पहने से तथा तथा तिलक लगाने से ईश्वर भक्ति का कार्य पूरा नहीं होता यदि मनुष्य का मन असिंथर हो और उसके में ईश्वर के प्रति पूर्ण विश्वास नहीं है उसका भक्ति में नाचना भी व्यर्थ है इसके विपरीत जो व्यक्ति सच्चे मन से ईश्वर पर विश्वास करके भक्ति करते हैं , भगवान उन्हीं पर प्रसन्न होते हैं ।

२. प्रश्नों के उत्तर -

प्र०क. छाया भी कब छाया ----- ?

उत्तर . कवि कहता है कि जेठ के महीने में बहुत अधिक गर्मी पडती है । उस समय ऐसा लगता है जैसे चारों ओर अंगारे बरस रहे हों । गर्मी को ऐसी भयकरता को देखकर लगता है कि शायद छाया भी छाया की तलाश में है । उस समय छाया या तो घने जंगलों में होती है अथवा घरों के अंदर होती है । छाया भी गर्मी से परेशान होकर छाया की तलाश में भटकती दिखाई देती है ।

प्र०ख. बिहारी की नायिका यह क्यों ----- ?

उत्तर . नायिका परदेस गए नायक को प्रेम - पत्र लिखती है । वह विरह की पीडा के कारण कागज़ पर लिखने में स्वयं असमर्थ पाती है । किसी अन्य के माध्यम से नायक को संदेश भेजने में उसे शर्म आती है । ऐसे में वह कहती है कि अब उसे किसी साधन की आवश्यकता नहीं है । नायक का हृदय ही उसे नायिका के हृदय की विरह व्यथा का आभास करा देगा । वह ऐसा इसलिए कहती है क्योंकि वह नायक से सच्चा प्रेम करती है । और यदि नायक भी उसके समान सच्चा प्रेम करता होगा तो उसका हृदय भी विरह की अग्नि में जल रहा होगा । ऐसे में वह नायिका के हृदय की पीडा का शहज ही अनुमान अपने हृदय की पीडा

से लगा लेगा ।

प्र० ग. घ. ड छात्र स्वयं से करे ।

३. शब्दार्थ पुस्तक करे ।

( व्याकरण )

प्र०१ संधि किसे कहते हैं ? ओर उसके भेद ( स्वयं कीजिए )

प्र०२ मुहावरे कीजिए ।

१. अंग छूना
२. गांठ बाधना
३. उगल देना
४. भीगी बिल्ली बनना
५. आंख लगाना
६. पत्थर की लकीर
७. खाक छानना
८. टस से मस न होना
९. अगंठा दिखाना
१०. रंग जमाना