

| Pre-Content/Content<br>Post Content                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Learning Outcomes/ Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
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| <p><b><u>Pre Content</u></b></p> <p>Teacher will begin the chapter by asking students to consider the following situations of daily life and think what happens when –<br/> <b>(i).Milk is left at room temperature during summers (ii)Cutting of a tree (iii) Grapes get fermented.</b></p> <p><b><u>Content</u></b></p> <ul style="list-style-type: none"> <li>➤ Chemical Equations</li> <li>➤ Types of Chemical Reaction</li> </ul> <div style="text-align: center;"> <pre> graph TD     A[Chemical Reactions] --&gt; B[Combination Reaction]     A --&gt; C[Decomposition Reaction]     A --&gt; D[Single Displacement Reaction]     A --&gt; E[Double Displacement Reaction]             </pre> </div> <ul style="list-style-type: none"> <li>➤ Oxidation Reduction reactions</li> </ul> <p><b><u>Post Content</u></b></p> <ul style="list-style-type: none"> <li>• Corrosion</li> <li>• Rancidity</li> </ul> | <p><b>Students will be able to:</b></p> <ul style="list-style-type: none"> <li>• <b>analyze</b> the various kinds of changes taking place during a chemical reaction.</li> <li>• <b>realise</b> the chemical changes that occur in our daily life</li> <li>• <b>demonstrate</b> chemical changes.</li> <li>• <b>recall</b> symbols and valency of common elements</li> <li>• <b>develop</b> a word equation form of chemical reaction</li> <li>• <b>categorize</b> various types of chemical Reaction</li> <li>• <b>distinguish</b> oxidation and reduction reactions</li> <li>• <b>apply</b> the concept of Oxidation and Reduction reaction to solve the given problems</li> </ul> | <p><b>Students will be able to:</b></p> <ul style="list-style-type: none"> <li>• <b>classify</b> physical and chemical changes</li> <li>• <b>predict</b> the products of a chemical reaction</li> <li>• <b>deduce</b> a few chemical formulae</li> <li>• <b>formulate</b> a word equation into symbolic chemical equation</li> <li>• <b>relate</b> law of Conservation to Balancing of Chemical Equation</li> <li>• <b>classify the types of reactions as:</b></li> <li>• <b>combination reaction</b></li> <li>• <b>thermal decomposition</b></li> <li>• <b>electrical decomposition</b></li> <li>• <b>photolytic decomposition</b></li> <li>• <b>displacement reaction</b></li> <li>• <b>double displacement reactio</b></li> <li>• <b>identify</b> oxidation reaction on the basis of gain of oxygen and reduction reactions on the basis of gain of hydrogen</li> <li>• <b>analyze</b> the merits and demerits of redox reactions in our daily life.</li> </ul> |

- HOME ASSIGNMENT- NCERT back exercise and Worksheets from Assignment booklet

| Teacher's Activity                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Student's Activity                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Teacher's Observation and Remedial action taken |
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| <p><b>Teacher will:</b></p> <p><u><b>ANNEXURE1(A)</b></u><br/><b>demonstrate</b> addition of Iron filings in copper sulphate solution.</p> <p><u><b>ANNEXURE1(B)</b></u><br/>divide the class into groups of four each, brief the activity on Endothermic and Exothermic reaction and make necessary arrangements for the activity.</p> <p><b>explain</b> Balancing of Chemical Reactions on the Board justifying law of Conservation of Mass.</p> <p><b>explain</b> combination reaction using a video</p> <p><u><b>ANNEXURE1(C)</b></u><br/><b>demonstrate</b> decomposition reaction in presence of heat through an activity</p> <p><b>explain</b> decomposition reaction in presence of electricity using a video:</p> <p><b>explain</b> decomposition reaction in presence of light using a</p> <p><b>explain</b> displacement reaction using a video</p> <p><b>explain</b> double displacement reaction using a video</p> <p><b>explain</b> heating of copper to explain the concept of oxidation and reduction reaction using a video:</p> <p><u><b>ANNEXURE 1(D)</b></u><br/>reinforce the topic by using the <b>HOT SPOT CONTENT</b></p> <p><b>explain</b> corrosion and rancidity with the help of examples.</p> | <p><b>Students will:</b></p> <p><u><b>ANNEXURE1(A)</b></u><br/><b>list</b> the changes taking place during the chemical reaction.</p> <p><u><b>ANNEXURE 1(a)</b></u><br/>perform the reactions and record the observations.</p> <p><b>practice</b> balancing equations by HIT and TRIAL method</p> <p>observe carefully and solve problem based questions</p> <p><u><b>ANNEXURE1(c)</b></u><br/><b>perform</b> the activity and record the observations.</p> <p><b>observe</b> carefully and <b>solve</b> problem based questions</p> <p><b>observe</b> carefully and <b>solve</b> problem based questions</p> <p><b>observe</b> carefully and <b>solve</b> problem based questions</p> <p><b>observe</b> carefully and solve problem based questions</p> <p><b>observe</b> carefully and <b>identify</b> the element <b>oxidized</b> and <b>reduced</b></p> <p><u><b>ANNEXURE 1(d)</b></u><br/><b>differentiate</b> between oxidation and reduction reaction and solve problem based questions</p> <p><b>predict</b> methods to prevent corrosion and rancidity in their notebooks.</p> |                                                 |

**Teaching Aids:** Chemistry lab, Activity Kits Worksheets, ICR, reference books.

**Methodology/ Innovative Methods:** Experiential Learning Method, Learner Centric Method, Demonstration Method

**Interdisciplinary Links:** Relating corrosion and rancidity to daily life. Rusting is a loss to national economy. Prevention of corrosion and rancidity methods adopted at industrial level.

## **ANNEXURE 1(A)**

### **Teacher will:**

1. Take a small amount of Copper Sulphate in a clean and dry micro test tube.
2. Hold it with a test tube holder
3. Add small amount of Iron Fillings to it using a spatula.
4. Shake the contents.
5. Record your observations.

## **ANNEXURE 1(a)**

### **Students will:**

1. Perform the above activity using their Activity Kits
  2. Observe carefully
  3. list the chemical changes taking place during the reaction
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## **ANNEXURE 1(B),1(b)**

### **Activity-Endothermic and Exothermic Reactions.**

#### **Duration-40mins**

#### **Nature of the Activity- Group**

#### **Learning Outcome-**

Students will be able to differentiate between Exothermic and Endothermic Reaction.

#### **What we have to do?**

To perform the following reactions, record their temperatures and identify Endothermic and Exothermic Reactions.

#### **What do we require?**

4 Beakers(10mL), water, Barium Chloride,Potassium Sulphate,Calcium Oxide,Anhydrous Copper Sulphate, Spatulas and Laboratory Thermometer

#### **What do we need to know?**

Teacher will ask students to recall the definition of Endothermic and Exothermic Reactions and give examples from daily life.The reactions in which amount of heat absorbed is more than the amount of heat released is called as an Endothermic Reaction and the reactions in which the amount of heat released is more than the amount of heat absorbed is called as an Exothermic Reaction

#### **How will you proceed?**

##### ➤ **Teacher's Activity**

Teacher will divide the class into groups of four each and make necessary arrangements for the activity also guide students on how to perform the activity.

##### ➤ **Student's Activity**

1. Take four beakers and label them A,B,Cand D

2. Put 5mL of water in A, B , C and D
3. Record the temperature of each liquid contained in beakers above.
4. Add one spatula of Potassium Sulphate, Calcium Oxide, Anhydrous Copper Sulphate and Barium Chloride to beakers A,B,C and D respectively and stir.
5. Record the temperature of each of the above mixture again

**What have you observed?**

| Beaker | Temperature of the liquids before start of the reaction | Temperature of the mixture at the end of the reaction |
|--------|---------------------------------------------------------|-------------------------------------------------------|
| A      |                                                         |                                                       |
| B      |                                                         |                                                       |
| C      |                                                         |                                                       |
| D      |                                                         |                                                       |

**What have you learnt?**

Reaction in Beaker A is an \_\_\_\_\_ reaction

Reaction in Beaker B is an \_\_\_\_\_reaction

Reaction in Beaker C is an \_\_\_\_\_reaction

Reaction in Beaker D is an \_\_\_\_\_reaction

## **EXTENDED LEARNING WORKSHEET**

### **What would you be interested to know?**

Q1. What are the conditions necessary for a chemical reaction to take place?

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Q2. What are the various types of chemical reactions?

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Q3. Why is respiration an Exothermic Reaction?

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## ANNEXURE 1D,1d

### ARE THE CRYSTALLINE SALTS REALLY DRY?

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|---------------------------|-----------------------------------------|
| <b>Subject</b>            | <b>Science</b>                          |
| <b>Class</b>              | <b>X</b>                                |
| <b>Chapter/Unit</b>       | <b>Chemical Reactions and Equations</b> |
| <b>Topic</b>              | <b>Decomposition Reaction</b>           |
| <b>Time</b>               | <b>45 minutes</b>                       |
| <b>Nature of Activity</b> | <b>Group</b>                            |

#### What will I learn (Learning Outcome)?

To analyze the changes that take place during heating of crystalline salt of copper sulphate and infer the type of reaction.

#### Skills:

Critical thinking, Analyzing and Applying

#### What I have to do?

To demonstrate the heating of copper sulphate salt.

#### What do I require?

copper sulphate salt, test-tube, test-tube holder, safety goggles, gloves and burner

#### What do I need to know?

**Decomposition reaction** is a reaction in which a single chemical compound breaks down to form two or more substances.

#### ➤ Teacher's Activity

Teacher will:

1. divide the class into groups of four each and explain the responsibility of each member of the group.
2. make the necessary arrangements for the activity and brief the necessary precautions to be taken during the activity.

**Caution\***The activity requires burning and therefore, should be strictly carried out under teacher's supervision\*

### **How will I proceed?**

#### **➤ Student's Activity**

1. Wear the safety goggles and gloves before beginning the activity.
2. Take small amount of blue coloured copper sulphate salt in a clean and dry test-tube.
3. Note the colour and state of the salt. Hold the test-tube with a test-tube holder and heat it over the burner.
4. Always heat the test-tube away from your face. Note the changes taking place upon heating the crystalline salt.
5. Heat the salt for 5-7 minutes more. Record observations again.

### **What have I observed?**

| S. No. | Color and state of:            | OBSERVATION - color and state |
|--------|--------------------------------|-------------------------------|
| 1.     | copper sulphate before heating |                               |
| 2.     | copper sulphate after heating  |                               |

### **What have I learnt?**

Since a single compound results in the formation of \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_ I conclude that, it as a \_\_\_\_\_ reaction.

### **What am I curious to learn?**

- Let us take a small amount of calcium carbonate. Note the colour and state of the salt. Now, heat it as described in the above activity. What do you observe? Is there a gas evolved during this reaction? How will you check the presence of the gas evolved?
- Let us take a small amount of Silver Bromide on a watch glass and keep it under direct sunlight. What will you observe?

### **Let me evaluate myself**

Q1. Define a Decomposition reaction.

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Q2. Predict the chemical equation for the reaction taking place in the above activity and balance it.

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Q3. Is the above reaction an endothermic reaction or exothermic reaction? Justify your answer by giving reason.

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Q4. Why do we see water droplets inside the test-tube as we start heating crystalline copper sulphate salt? What will happen if water is added back to the test-tube at this stage?

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Q5. One of the students tries to pass hydrogen gas through black coloured copper oxide formed in the above activity as the final residue. What will she observe? What type of reaction has taken place? Support your answer with the help of a chemical equation.

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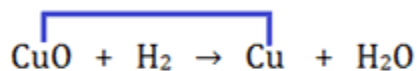
**ANNEXURE 1D,1d**

**Teacher's activity:**

***Teacher will reinforce the topic by using the following content***

**Oxidation Reaction** –can be defined as the reaction which involves **addition of oxygen, removal of hydrogen or loss of electrons**

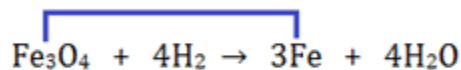
Removal of oxygen [Reduction]



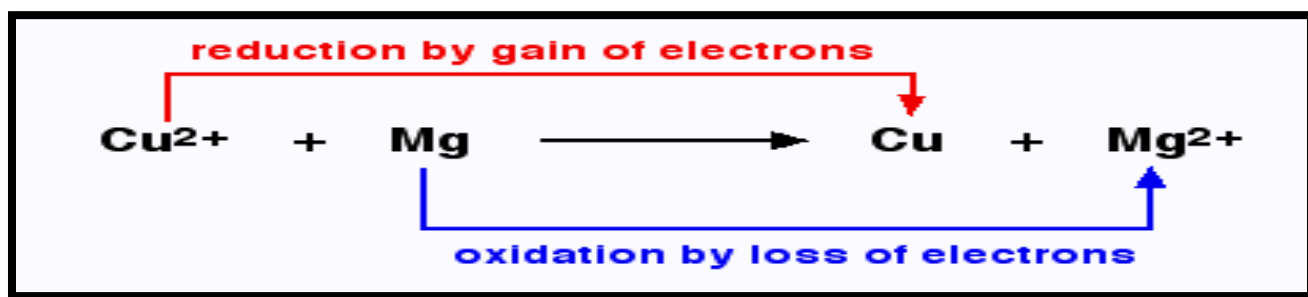
Addition of oxygen [Oxidation]

**Reduction Reaction**-can be defined as the reaction which involves **addition of hydrogen, removal of oxygen or gain of electrons**

Removal of oxygen [Reduction]



Addition of oxygen [Oxidation]



The above reactions also involves loss or gain of electrons which can be easily explained by **OIL** and **RIG** method

**OIL- means Oxidation is Loss of Electrons**

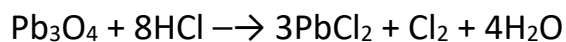
**RIG-means Reduction is gain of Electrons**

**Student's Activity:**

***Students will answer the following questions to assess the learning***

Q1. Differentiate between Oxidation and Reduction Reaction

Q2. Identify the oxidizing agent (oxidant) in the following reaction:



Q3. Identify the reducing agent in the following reaction:



