

Alternate Academic 2021- 2022

Class:10

Subject: Science

Month: October.

Chapters:Chapter-3-Metals and non-metal



S l n o	Month/ week	Main learnin g abilities	Learning activities	Evaluat ion
1	Chapter- 3 Metals and non- metals October first week.	Physica l propert ies of metals and non- metals: 1. List out the	1. Textbook activity 3.1(Knowing that metals have a shiny surface.) 2. Textbook activity 3.2(The activity of knowing that metals are generally hard, the hardness of metals varies between different metals) 3. Textbook activity 3.3 and 3.4 (The activity of knowing that the metals posses the property of malleability and ductility.) 4. Textbook activity 3.5 and 3.6(The activity of knowing that metals are good conductors of heat and electricity.)	1. List out the differen ces between metals and non- metals.

	<p>differences between the physical properties of metals and non-metals.</p> <p>2. Defining the terminology of the properties of metals and non-metals.</p> <p>3. Naming</p>	<p>YouTube link showing a comparison of thermal conductivity of metals. https://youtu.be/WZF7mNL2Tc8?list=PLGt6GZXitIK_IVK5GBAp4EKdxmDzpaCL.</p> <p>5. Textbook activity 3.7 (The activities of knowing the properties of metals.)</p> <p>6. Flash cards about exceptional qualities.</p> <p>7. You tube link of samveda video lesson. https://youtu.be/1Cpxahjm02E.</p> <p>8. Activity sheet-1 and practice sheet-2</p>	<p>2. Define the following:</p> <ul style="list-style-type: none"> * Lustrous/brilliance of metals. * Malleability and ductility * Sonorous * Melting point and boiling point
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		<p>the metals and non-metals that show special properties.</p> <p>4. Exceptional properties of metals and non-metals.</p>		<p>3. Give examples of metal and non-metals with exceptions in their properties.</p> <p>4. Practice book page numbers from 13 to 17.</p>
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3.	October third week.	<p>8. Depending on availability of metals in nature and reactivity series they write down the line map depicting extraction of metals.</p> <p>9. With the help of chemical equation they shall understand the extraction of metals low in the activity series like mercury and extraction of copper, roasting and calcination methods.</p> <p>10. By analyzing the equations of thermite process and</p>	<p>1. Observing the different ore samples and classify them according to their line maps of extraction process.</p> <p>2. Collect and name locally, easily available metal pieces.</p> <p>3. Complete the given table from the information provided by the textbook regarding extraction of metals like mercury, copper, zinc, manganese, iron, sodium.</p> <p>4. Viewing the image of electrolytic refining of copper.</p> <p>5. Guiding them to find out the reasons for darkening of silver, green stains on copper vessel, rusted iron sample.</p> <p>6. List out the constituents and uses of alloys given .</p> <p>7. You tube link of samveda video lesson. https://youtu.be/Y_m8-Z8qwsM</p> <p>8. Activity sheet-4, activity sheet sheet-5 and activity sheet-2.</p>	<p>1. Define the following , Mineral, ore, extraction of metals, alloys, roasting, calcination. Thermite process, corrosion.</p> <p>2. List out the methods of preventing corrosion.</p> <p>3. Explain the electrolytic refining of copper with the help of diagram.</p> <p>4. State the constituent unit and uses of following given alloys,</p> <ul style="list-style-type: none"> * Stainless steel * Bronze * Brass * Soldering metal.
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		electrolytic decomposition process they understand the extraction of metals. 11.They understand about corrosion and list out the preventive measures to control it.		
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This alternative academic calendar should be considered for the remaining three weeks, excluding the October mid- term vacations.

ACTIVITY SHEET : 1

1. Depending on the properties given below list out the differences between metals and non-metals:-

Characteristics	Metals	Non-metals
1. Physical state		
2. Hardness		
3. Lustrous		
4. Malleability		
5. Ductility		
6. Thermal conductivity		
7. Electrical conductivity		
8. Melting point		
9. Boiling point		
10. Sonorous		

2. Name the following :-

- 1. The most malleable metal _____**
- 2. The most ductile metal _____**
- 3. The best thermal conductive metals _____**
- 4. The weak thermal conductive metals _____**
- 5. Liquid metal _____**
- 6. Liquid Non-metal _____**
- 7. The metal which melts when kept on our palms _____**

8. Lustrous Non-metal _____

9. The hardest natural substance _____

10. Non-metal which conducts electricity _____

11. Soft metals _____

12. Amphoteric oxides _____

3. Give scientific reasons for the following:-

1. The wires that carry current in your home have a coating of PVC or a rubber like material.

Ans: _____

2. Metals like sodium and potassium are stored in kerosene.

Ans: _____

3. The most reactive metals starts floating on water when they react with cold water.

Ans: _____

4. Hydrogen gas is not evolved when metals react with nitric acid.

Ans: _____

5. Copper does not react with iron sulphate solution.

Ans: _____

6. Solder metal is used for welding electrical wires together.

Ans: _____

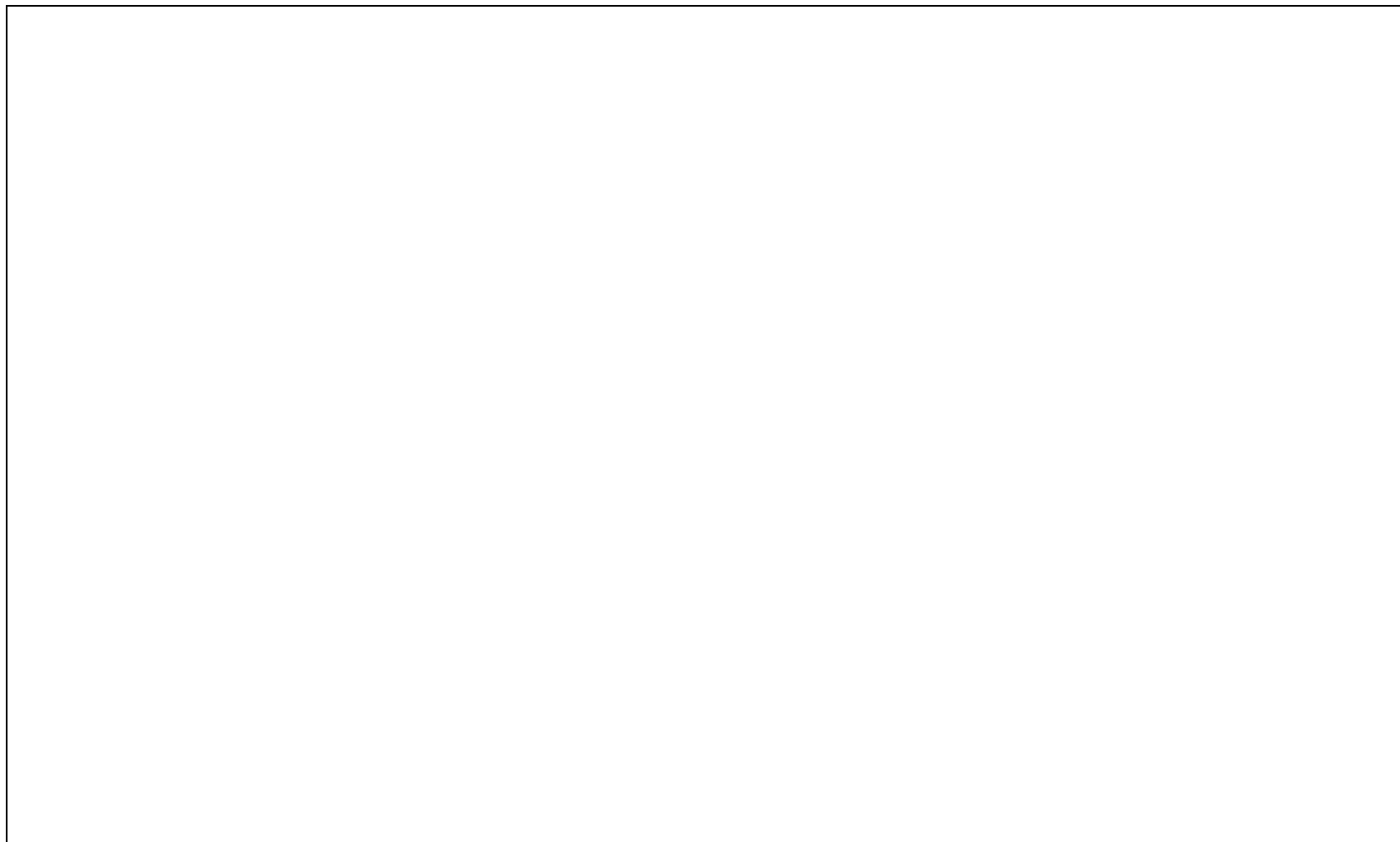
ACTIVITY SHEET : 2

1. Draw the neat diagrams of the following and label the parts:-

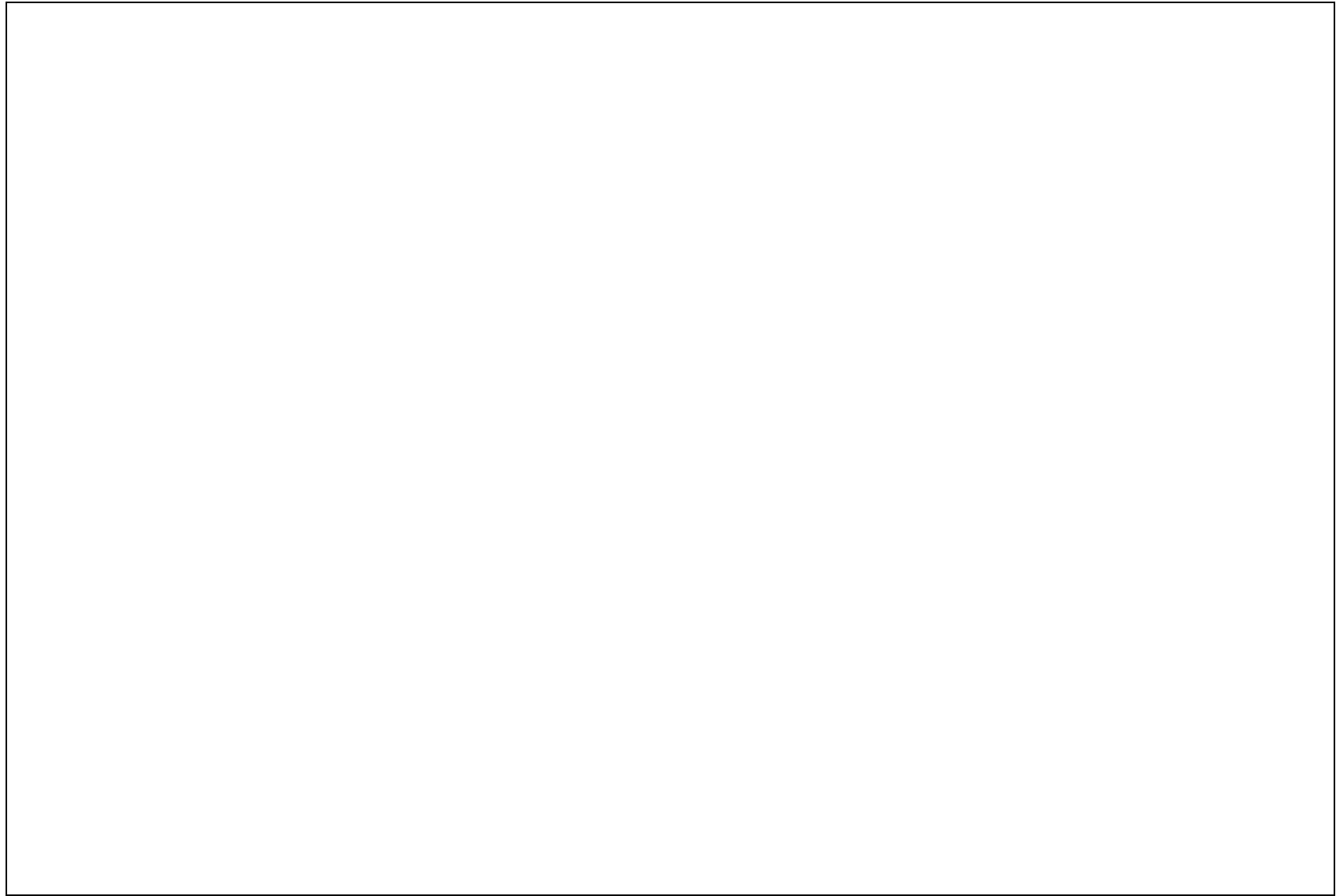
1. Action of steam on a metal:



2. Testing the conductivity of a salt solution:



3. Electrolytic refining of copper:



II. Write down the electron dot structure of the following,

1. Formation of sodium chloride and magnesium chloride.

Ans:

Sodium chloride:

Magnesium chloride:

2. Sodium, Oxygen and Magnesium.

Ans:-

Sodium :

Oxygen:

Magnesium:

III What is corrosion? Name the methods used for preventing corrosion.

Ans: _____

**IV Write down the following elements in their increasing order of their reactivity,
Zinc, Gold, Mercury, Silver, Iron, Calcium, Lead, Sodium, Aluminium.**

Ans: _____

Practice Book page number-15.

ACTIVITY SHEET : 3

WRITE DOWN THE BALANCED CHEMICAL EQUATION FOR THE FOLLOWING (ONE OF THE EXAMPLE IS GIVEN);

Sl no	Metals	Reaction with oxygen or burning in oxygen
1.	Magnesium	$2\text{Mg} + \text{O}_2 \rightarrow 2\text{MgO}$ Magnesium Oxygen Magnesium oxide
2.	Iron	
3.	Aluminium	
4.	Copper	
5.	Sodium	



Sl no	Metals	Reaction of metals with cold water
1.	Sodium	
2.	Potassium	
3.	Calcium	
Sl no	Metals	Reaction of metals with hot water.
1.	Magnesium	
Sl no	Metals	Reaction of metals with steam
1.	Aluminium	
2.	Iron	

SL No	Metals	Reaction of metals with Hydrochloric acid
1.	Magnesium	
2.	Aluminium	
3.	Zinc	
4.	Iron	
Sl no	Metals	Reaction of metals with dilute nitric acid
1.	Copper	
2.	Magnesium	
3.	Manganese	

Sl no	Reactants	Reaction of metals with solutions of metallic salts
1.	Iron with copper sulphate.	
2.	Copper with silver nitrate.	

ACTIVITY SHEET : 4

WITH THE HELP OF INFORMATION GIVEN IN THE TEXTBOOK COMPLETE THE FOLLOWING TABLE REGARDING EXTRACTION METHODS OF METALS FROM THEIR RESPECTIVE ORES:-

Ores	Extraction of metals from their ores	Explanation of the extraction method with the help of equation
	Extraction of mercury from Cinnabar ore.	
	Extraction of copper from Chalcocite ore.	



**Extraction of zinc
from zinc blende
ore.**




**Extraction of
Zinc from zinc
spar ore or
smithsonite ore.**





**Extraction of
sodium from
sodium chloride.**

ACTIVITY SHEET : 5

List the constituent component and uses of alloys given below and state their special properties :-

ACTIVITY SHEET-6

I Each sentence states a metal or non-metallic characteristics. Identify the correct answer:-

1. I shine when I am polished	Metal / Non-metal
2.I do not let current to pass through me.	Metal / Non-metal
3.I am often in the gaseous state at room temperature.	Metal / Non-metal
4. I am a good thermal conductor.	Metal / Non-metal
5. Most things in the world are made by me.	Metal / Non-metal
6.You get me mostly in the solid state at room temperature.	Metal / Non-metal
7.I do not shine even though I am polished.	Metal / Non-metal
8. When I am hit I emit a melodious tone.	Metal / Non-metal

A, B, C and D four metallic pieces have been taken and immersed in the following solutions one by one. The results obtained is listed as follows,

Metals	Iron(II) sulphate	Copper(II)sulphate	Zinc sulphate	Silver nitrate
A	No response	Displacement		
B	Displacement		No response	
C	No response	No response	No response	Displacement
D	No response	No response	No response	No response

Answer the following questions by using the data given in the above table with respect to the metals A, B, C, and D,

I Which is the most reactive metal?

Ans: _____

ii. If you immerse 'B' into the copper sulphate solution, what do you notice?

Ans: _____

iii. Write down the metals A, B, C and D in their decreasing order of their reactivity.

Ans: _____

