SMART SKILLS

ACADEMIC SESSION 2021-2022

CHEMISTRY

CLASS VIII

KEY FEATURES OF SCIENCE SMART SKILLS

- This edition is enriched with activities, quizzes, crosswords, multiple choice questions, in-text questions etc. to check the child's grasp of the concept.

- The **H.O.T.S.** (High Order Thinking Skills) questions will help in developing child's logical and analytical thinking and will greatly enhance the development of independent thinking skills.

- The activities will help to focus child's attention on the concept to follow and explain and reinforce the scientific concepts.

- The **LET US DO** sections have activities like research, group work, peer work etc which will help the child to apply the concepts of science.

- The **FACTOPAEDIA** contains scientific facts. This will help in creating awareness among the students about the world of science.

- Last but not the least – This smart skill has been prepared to help the children develop a scientific aptitude by
  - ✓ Reinforcing concepts
  - ✓ Strengthening expression
  - ✓ Developing independent thinking
  - ✓ Understanding the reasoning of day to day phenomena

CONTENTS

Chapters **Pages**

SYLLABUS FOR THE YEAR 4-5

SYLLABUS

TERM I

APRIL-MAY

Language of chemistry –

Chemical formula writing, Chemical equation writing and balancing of chemical equations.

Practice assignment

Chemical effects of electric current

Testing and identification of electrolytes and non- electrolytes by using different devices,the different chemical effects of current

JULY- AUGUST

Chemical effects of electric current

Electroplating- its advantages and applications

Materials: Metals and Non-Metals – Introduction, physical properties of metals, physical properties of non-metals, Chemical properties of metals and non-metals, Corrosion, Uses of metals and non-metals

Synthetic Fibres And Plastics –Monomer, polymer, polymerization, natural and synthetic fibres, Properties and uses of some common synthetic fibers (rayon, nylon, polyester, acrylic, terylene, terycot), Plastics as polymers, why plastics are a favored material for making storage containers, thermoplastics and thermosetting plastics, harmful effects of using plastics.

First term examination

TERM II

SEPTEMBER- OCTOBER

Coal and Petroleum - Introduction, Natural resources- Exhaustible and Inexhaustible, Fossil fuels –coal (formation, products and uses)

NOVEMBER –DECEMBER

Coal and Petroleum (contd.) - Fossil fuels - petroleum and natural gas; Formation, their products and uses, PCRA guidelines for light motor vehicles

DECEMBER – JANUARY

Combustion and Flame – Combustion, Conditions necessary for combustion, Types of combustion, Fire

Flame – Structure of a flame, Fuels – Characteristics of an ideal fuel, Calorific value and efficiency of a fuel, Consequences of burning fossil fuels

Revision

Second term examination

LANGUAGE OF CHEMISTRY

LEARNING OBJECTIVES/ OUTCOMES

- Identify elements with their symbols
- Relate elements with their valencies
- Able to write chemical formula using valencies

- Should be able to formulate chemical equations using the symbols and formulae

Writing chemical formulae

Radical representation

Positive radicals		
Name	**Valency**	**Radical representation**
Sodium	1	Na^+
Potassium	1	K^+
Hydrogen	1	H^+
Copper/Cuprous	1	Cu^+
Ammonium	1	NH_4^+
Magnesium	2	Mg^{2+}
Zinc	2	Zn^{2+}
Copper/Cupric	2	Cu^{2+}
Iron/Ferrous	2	Fe^{2+}
Calcium	2	Ca^{2+}
Aluminium	3	Al^{3+}
Iron/Ferric	3	Fe^{3+}

Negative radicals		
Name	**Valency**	**Radical representation**
Chloride	1	Cl^-
Fluoride	1	F^-
Bromide	1	Br^-
Iodide	1	I^-
Nitrate	1	NO_3^-
Hydroxide	1	OH^-
Bicarbonate	1	HCO_3^-
Oxide	2	O^{2-}
Sulphide	2	S^{2-}
Sulphate	2	SO_4^{2-}
Carbonate	2	CO_3^{2-}
Phosphate	3	PO_4^{3-}
Nitride	3	N^{3-}
Carbon	4	C^4

Chemical formula

A chemical formula is the short hand representation of a chemical compound which is written using symbols of the elements involved. Let us learn how to deduce the chemical formula of an ionic chemical compound comprising of a positive and a negative radical or a metal and a non metal.

Steps for writing a chemical formula-

I Write the symbols of the radicals side by side, keeping the positive radical on the left and the negative radical on the right.

For example- Na O

II Write the valencies of the radicals on their top right hand side.

For Example- Na^{1+} O^{2-}

III Cross the valencies and write them as sub-scripts.(the valency of the negative radical becomes the atomicity of the positive radical and vice versa). The charges on the radicals are NOT written in the chemical formula.

For example- Na^{1+} O^{2-}

Na_2O

IV If possible, bring the valencies to the lowest terms.

For example- Ca^{2+} O^{2-}

Ca_2O_2 or CaO

V If a radical has more than element, keep it in a bracket. The atomicity of the individual atoms in such a radical cannot be brought to lowest terms.

For example- Ca^{2+} SO_4^{2-}

$Ca_2(SO_4)_2$ or $CaSO_4$ (The number 4 here cannot be cancelled). Also, the formula cannot be written as $Ca_2S_2O_8$

Exercise (to be done in the notebook)

Write the chemical formulae for the following compounds-

1. Aluminium chloride
2. Sodium sulphate
3. Potassium nitrate
4. Calcium bicarbonate
5. Zinc oxide
6. Magnesium nitride
7. Ammonium phosphate
8. Sodium sulphide
9. Ammonium hydroxide
10. Cuprous oxide

Steps for naming a chemical compound

I Write the name of the metal/ positive radical (the first alphabet written in capital) followed by the name of the negative radical/non-metal (written in small).

II Note- The names of the metal and radicals remain the same. The name of the non-metal is written endind in " –ide".

For example-

NaCl- Sodium chloride

NH_4OH- Ammonium hydroxide

III The names of radicals consisting of more than one atom remains the same. For example- Carbonate (CO_3), hydroxide (OH^-)

IV In case of variable valency, the radical with a lower valency ends in **–ous** while the higher valency is written as **–ic.**

For example Ferroussulphate (Fe^{2+}), Ferric chloride (Fe^{3+})

Now write the chemical names of the following compounds-(In the notebook)

a. Na_3PO_4
b. $Al(OH)_3$
c. CaO
d. KCl
e. $FeSO_4$
f. CuO
g. NH_4NO_3
h. Na_2SO_4
i. $Mg(HCO_3)_2$
j. H_2S

NAME: _____

WRITING FORMULAS (CRISS-CROSS METHOD)

Write the formulas of the compounds produced from the listed ions.

	Cl^-	CO_3^{-2}	OH^-	SO_4^{-2}	PO_4^{-3}	NO_3^-
Na^+	NaCl					
NH_4^+					$(NH_4)_3PO_4$	
K^+						
Ca^{+2}						
Mg^{+2}						
Zn^{+2}						
Fe^{+3}		$Fe_2(CO_3)_3$				
Al^{+3}						
Co^{+3}						
Fe^{+2}						
H^+						

Smart Notes

In order to understand chemistry, it is important to understand and know how to write chemical equations. So let us practice writing chemical equations!!!

Chemical equations

You already know that a change in which new substance/s is formed with different properties is called a **chemical change**.

Chemical equations- A chemical equation is a short hand representation of a chemical change. It uses symbols and formulae.

A chemical equation has two parts- reactants and products.

Reactants- The substance/s which take part in a chemical change are called reactants. They are written on the left hand side of the arrow in a chemical equation. More than one reactant are separated by a '+' sign.

Products- The new substance/s which are formed as a result of a chemical change are called products. They are written on the right hand side of the arrow in a chemical equation. More than one products are separated by a '+' sign.

A general chemical equation can be represented as follows-

$$A + B \rightarrow C + D$$

In this equation-

Reactants- A, B

Products- C, D

The above equation can be read as- A combines with B to form C and D.

Example- $Na + O_2 \rightarrow Na_2O$

This equation represents the reaction- Sodium combines with oxygen to form sodium oxide. Sodium and oxygen are the reactants and sodium oxide is the product.

A chemical equation can be made more informative by adding the state of matter of reactants and products, conditions under which a reaction occurs, gas liberated etc.

Balanced chemical equation- Matter cannot be created or destroyed. Therefore, all atoms which combine during a chemical change must be obtained back after the reaction is over. A chemical equation must, therefore, be balanced.

A balanced chemical equation is one in which the atoms of each element is equal on both sides of the arrow. This means that if there are 2 atoms of hydrogen on the left of the arrow, there must be 2 atoms on the right too.

How to balance a chemical equation

Write the chemical equation using symbols and formulae of the elements and compounds involved.

Ex.- $H_2 + O_2 \rightarrow H_2O$

Count the number of any element on the LHS, let's say hydrogen.

No. of atoms of Hon LHS = 2

No. of atoms of H on RHS = 2

This element is already balanced. Let us then count the no. of oxygen atoms.

No. of O atoms on LHS = 2

No. of O atoms on RHS = 1

If we multiply the no. of atoms on RHS by 2, then oxygen would be balanced.

$H_2 + O_2 \rightarrow 2\ H_2O$

We have not written the RHS as H_2O_2 which also increases the no. of oxygen atoms because that changes the molecular formula and we know that every compound has a definite chemical formula. This means that we can only increase the no. of molecules.

Now, No. of O atoms on LHS = 2

No. of O atoms on RHS = 2

However, no. of H atoms on LHS = 2

No. of H atoms on RHS = 2 X 2=4 So, we will now have to increase the no. of H on the LHS.

$2H_2 + O_2 \rightarrow 2H_2O$

Again, we cannot write $2H_2$ as H_4 although the no. of H atoms is the same in both the cases.

Now, no. of H atoms on both sides is 4 and that of O is 2. The equation is balanced.

Ex - $H_2 + Cl_2 \rightarrow HCl$

No. of H atoms on LHS = 2

No. of H atoms on RHS = 1

Multiplying the RHS by 2,

$H_2 + Cl_2 \rightarrow 2HCl$

Again, note that RHS cannot be written as H_2Cl as the same changes the molecular formula.

Also, this balances the no. of chlorine atoms too.

Exercise

Now, balance the following chemical equations- (to be done in the notebook)

1. $Ca + O_2 \rightarrow CaO$
2. $H_2 + O_2 \rightarrow H_2O$
3. $Na + H_2O \rightarrow NaOH + H_2$
4. $N_2 + H_2 \rightarrow NH_3$
5. $P_4 + O_2 \rightarrow P_2O_5$
6. $Al + HCl \rightarrow AlCl_3 + H_2$
7. $H_2SO_4 + Fe \rightarrow Fe_2(SO_4)_3 + H_2$
8. $CH_4 + O_2 \rightarrow CO_2 + H_2O$
9. $Mg + H_2SO_4 \rightarrow MgSO_4 + H_2$
10. $K + H_3PO_4 \rightarrow K_3PO_4 + H_2$
11. $Zn + HCl \rightarrow ZnCl_2 + H_2$

Chapter – 14

CHEMICAL EFFECTS OF ELECTRIC CURRENT

- **LEARNING OBJECTIVES/ OUTCOME:** By the end of the lesson, students will be able to
- Define heating effect, magnetic effect and chemical effect of electric current (Understand)
- Differentiate between good conductor and poor conductor (Analyze)
- Make a tester bulb, wire, switch and battery (Create)
- State the uses of heating effect, magnetic effect and chemical effect of electric current in our daily life (Analyze)
- State the changes occur during chemical effect of electric current on the electrode (Analyze)
- Define electroplating and state its uses (Understand)
- Students will do build a tester using a bulb, connecting wire, battery and switch to check the conductivity of liquids

Activities (laboratory demonstrations)-

1.To test the conductivity of given liquids and classify the given substances as conducting or non conducting

2.To test the chemical effects of electric current

3.To electroplate a nail or blade with copper

Chemical Effects of Electric Current –

Class 8: Notes

Electric Current:

The flow of electrons through a conducting material is termed as an electric current.

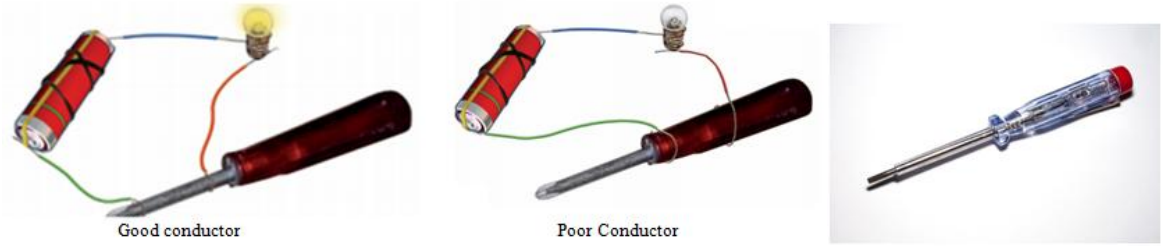
Good Conductors of Electricity:

The materials which allow the current to pass through them easily are known as good conductors. Example- metal like copper, aluminium, etc. and graphite (a form of carbon)

Poor Conductors of Electricity:

The materials which do not allow the current to pass through them easily, are known as poor conductors. They are also called as insulator. Examples are glass, plastic, etc.

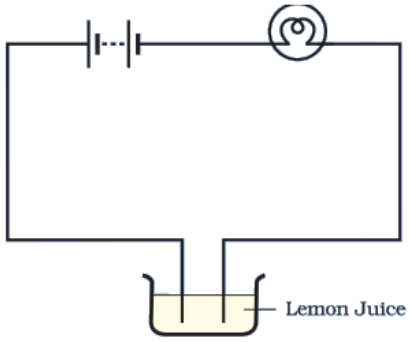
Tester:
It is a device to test if a particular material allows electric current to pass through it or not.



Tester

Conductivity in Liquids:

(i) A tester can be used to check if a liquid is conducting or non-conducting.
(ii) To check if the liquid is conducting or not, connect the liquid between the two ends of tester by completing the connection of the circuit properly. If bulb in the tester glows, it means the liquid is conducting. But, if does not glow then it means liquid is non-conducting.



(iii) Most liquids that conduct electricity are solutions of acids, bases and salts. A poor conductor of electricity can be made a good conductor by adding a few drops of acid to it.

Heating effect of current:

The heating effect of current is responsible for the glowing of the bulb.

LED (Light Emitting Diodes):
LED's can be used to detect weak currents, since; their filament does not require much temperature to glow.
They have two terminals called anode and cathode. The length of anode lead is slightly longer than the cathode lead and is always connected to the positive terminal of the battery. On the hand, cathode lead is shorter and is connected to the negative terminal of the battery.

(note- if you see the cap of the LED, you would see a flag and a straight line)

Magnetic effect of current:

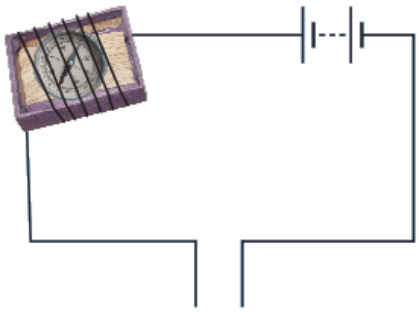
The magnetic effect of current is responsible for the deflection in magnetic compass when current passes nearby it. It can detect weak currents.

To test whether substance is conducting or not using magnetic effect:

For a closed circuit, when current passes nearby a magnetic needle and if the deflection is observed in the needle then it means the substance is conducting; otherwise it is non-conducting.

Tester By using Magnetic Compass:

(i) Take the tray from inside a blank matchbox.
(ii) Wrap an electric wire a few times around the tray.
(iii) Insert a small compass needle inside it.
(iv) Now connect one free end of the wire to the terminal of a battery. Leave the other end free.
(v) Take another piece of wire and connect it to the other terminal of the battery



Join the free ends of two wires momentarily. The compass needle should show deflection. Your tester with two free ends of the wire is ready.

Touch the both ends of tester to any substance to check whether the substance is conducting the electricity or not. If the deflection is observed in the needle then it means the substance is conducting; otherwise it is non-conducting.

Chemical Effects of Electric Current:

Electrodes:

These are conducting materials through which current enters or leaves a substance.

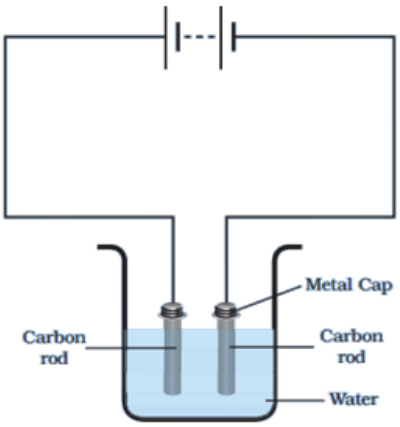
(i) Positive Electrode: It is the electrode which is connected to the positive terminal of the battery. It is also known as **Anode. Impure metal** is taken as the **anode.**
(ii) Negative Electrode: It is the electrode which is connected to the negative terminal of the battery. It is also known as **Cathode. Pure metal** is collected at the **cathode.**

There can be various chemical effects observed on passing electric current depending on the type of solution and electrodes:

1. Formation of Gas Bubbles:

A British Chemist named William Nicholson performed an experiment showing that if current is passed through water, then, bubbles of oxygen and hydrogen were produced. The oxygen bubbles will be present on positive electrode and hydrogen bubbles on the negative electrode. The passage of an electric current through a conducting solution causes chemical reactions. As a result, bubbles of a gas may be formed on the electrodes

William Nicholson



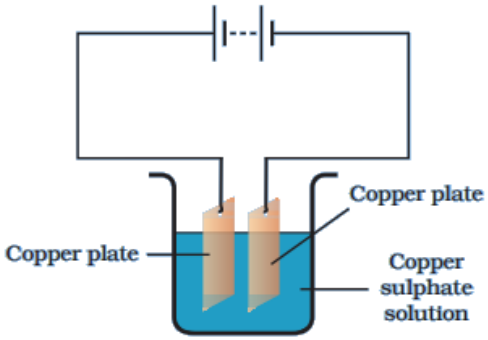
Passing current

2. Deposits of metal may be visible on the electrodes.

3. The color of solution might change.

Electroplating: The process using which layer of some metal is deposited on another material by using electricity is known as electroplating.

Experiment: We need to take copper sulphate and two copper plates of same size. Take 250 mL of distilled water in a clean and dry beaker. Dissolve two teaspoonfuls of copper sulphate in it. Add a few drops of dilute sulphuric acid to copper sulphate solution to make it more conducting. Connect the copper plates to the terminals of a battery and immerse them in copper sulphate solution.



Connect the circuit as shown in the figure.

When current is allowed to pass through the copper sulphate solution, then the solution will separate into the copper and sulphate. The separated free copper of the solution will get deposited on the negative electrode. And the same amount of copper will get dissolved in the solution from the positive electrode. Hence, we can say that copper from positive electrode got transferred to the negative electrode. This kind of transfer is known as electroplating.

Fun with chemistry (Copper plating)

You will need

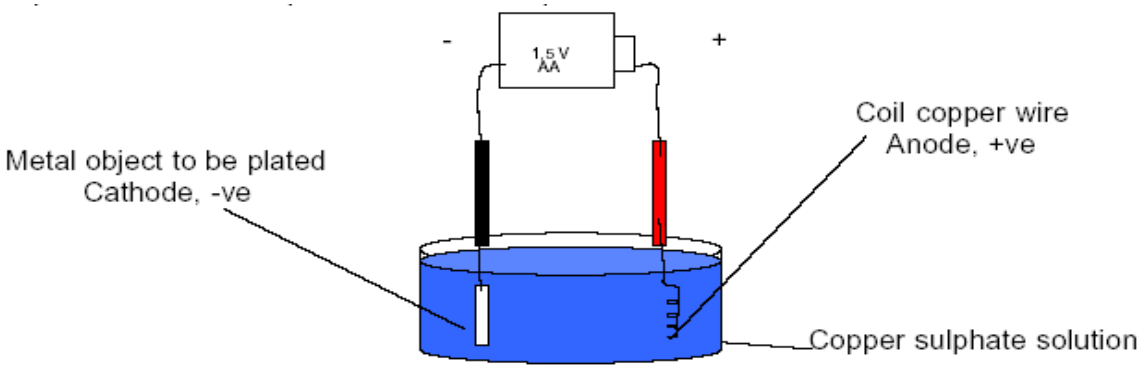
- A plastic or glass container (non metal)
- (1.5 V cell)
- Two length of copper wire
- One coil of copper wire
- A metal object to copper plate (spoon, nail)
- Plastic spoon
- Copper sulphate (the metal salt,) available at most chemist

Copper sulphate is poisonous if swallowed

1. Add 1 teaspoon of copper sulphate to water to make up a solution (about to 400ml.)

2. Strip & connect negative lead to object that must be copper plated and place in solution. (For good results make sure object is clean.)

3. Strip coil, connect to positive lead and place coil into the solution



Within a minute the object becomes coated with copper. The electric current splits the COPPER sulphate. The COPPER is deposited on the metal object.

For you to find out:

- Is it possible to electro plate on a non-metallic object? Please explain your answer.

Silver plating, chrome plating, and gold plating are examples of electroplating in industry. The picture shows a watch that was chrome plated. Parts of the plating are eroding. Say what can be done to recoat it. Use the word electroplating in your answer. In the real world getting rid of chemical waste in electro plating is huge problem. What effect does the waste chemical have on the environment?

Applications of Electroplating:

(i) It is used in industries for coating different metals on other metal objects. For example, chromium which is a lustrous, corrosion free, scratch resistant, etc. but being costly is deposited on materials like car parts, taps, burners, etc. to lower the manufacturing cost.

(ii) Silver and gold are deposited on cheaper materials by jewelers to lower the jewellery cost, but, keeping the appearance intact.

(iii) Iron cans are electroplated with tin used for storing food, as iron gets easily rusted and so protects the food from spoiling.

(iv) Zinc is deposited on iron used for the construction of bridges, vehicles, etc. to protect it from rust and corrosion (galvanization).

ACTIVITY 1 (to be done in the laboratory)

Aim: To test the conductivity of the given liquids

Materials Required: Beakers, liquid sample, bulb, key, wires

Theory: When the two free ends of the wire of the circuit are dipped in a liquid, the bulb glows if the liquid is an electrolyte.

Diagram:

Procedure:

1. Fill the beakers with the liquid samples given.
2. Make the connections as shown in the figure.
3. Clean the free ends of wire every time and dip in the liquid samples.

Observation:

S.No.	Name of the liquid	Bulb glows (yes/no)	Electrolyte (yes/no)
1	Dilute hydrochloric acid		
2	Sodium hydroxide solution		
3	Copper sulphate solution		
4	Sugar solution		
5	Acidified water		
6	Tap water		
7	Dilute sulphuric acid		

Conclusion:_____

_____

_____

_____

ACTIVITY 2

Aim – **To study the chemical effects of current**

Procedure 1

Take tap water acidified with a few drops of dil. sulphuric acid in a beaker and connect it to the tester and observe for few minutes.

Observation

_____

_____

_____

_____

_____

Procedure 2

Take a metallic blade or key. Connect it to the negative terminal of a circuit whose positive terminal is connected to a copper electrode. Immerse both the electrodes into a solution of copper sulphate. Switch on the circuit and observe after 1-2 minutes.

Observation

_____

_____

_____

_____

Procedure 3 - A potato is taken and cut into two halves. The two ends of a copper wire connected to a simple circuit are inserted to the cut ends of the potato. The circuit is switched on and left for 25-30 minutes. What do you observe? Explain your observation.

Figure

Observation:_____

_____

_____

_____

Conclusion

_____

_____

These are some of the chemical effects of electric current.

_____

_____

_____

_____

ACTIVITY 3

Aim: To electroplate a blade/nail with copper

Materials Required: Copper plate, blade, cell, copper sulphate solution, beaker, wires, key

Theory:_____

_____

_____

Diagram:

Procedure:

1. Make the connections as given in the diagram.
2. The free ends of the two wires from the positive and negative terminals are connected to the copper plate and blade respectively.
3. The key is inserted to allow the current to flow for 1-2 minutes at 4V approximately.

Observation:

Conclusion:

CHEMICAL EFFECTS OF ELECTRIC CURRENT

Assignment 14.1(to be done in the smart skill)

Multiple Choice Questions

1. An electric current can produce

(a) heating effect only.

(b) chemical effect only.

(c) magnetic effect only.

(d) chemical, heating, and magnetic effects.

2. Boojho and Paheli performed experiments taking similar bulbs and cells but two different solutions A and B as shown in Fig.14.1.

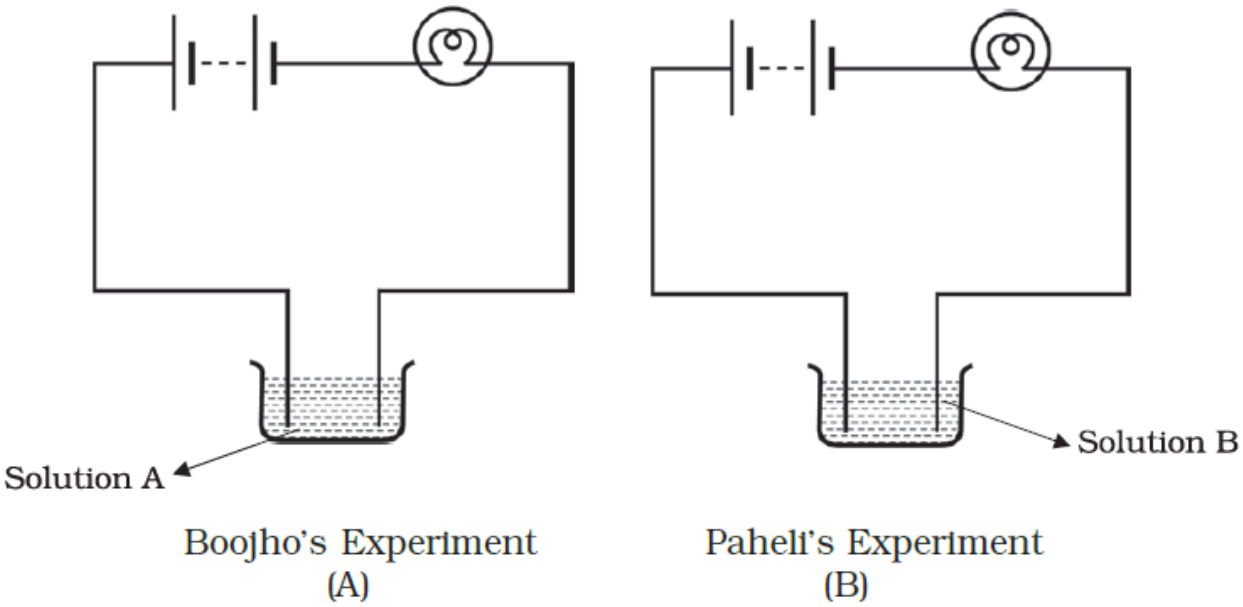


Fig. 14.1

They found that the bulb in the setup A glows more brightly as compared to that of the setup B. You would conclude that

(a) higher current is flowing through the circuit in setup A.

(b) higher current is flowing through the circuit in setup B.

(c) equal current is flowing through both the circuits.

(d) the current flowing through the circuits in the two setups cannot be compared in this manner.

3. When an electric current is passed through a conducting solution, there is a change of colour of the solution. This indicates

(a) the chemical effect of current.

(b) the heating effect of current.

(c) the magnetic effect of current.

(d) the lightning effect of current

4. Which one of the following solutions will not conduct electricity?

(a) lemon juice

(b) vinegar

(c) tap water

(d) vegetable oil

5.

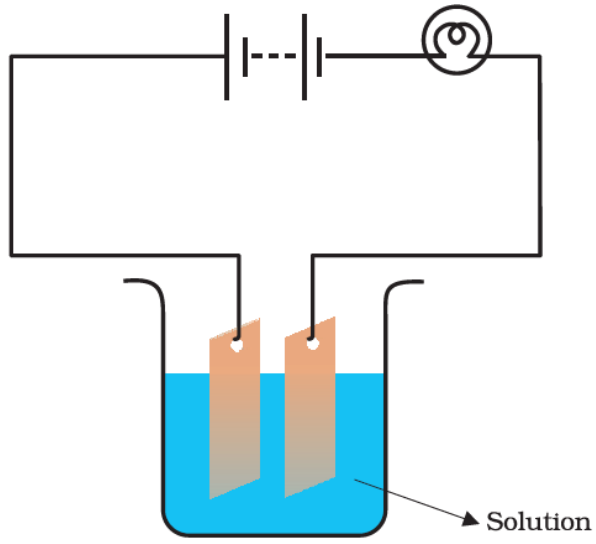


Fig. 14.2

Which of the following solutions will not make the bulb in Fig 14.2 glow?

(a) sodium chlorides

(b) coppersulphate

(c) silver nitrate

(d) sugar solution in distilled water

8. Which of the following metals is used in electroplating to make objects appear shining?

(a) iron

(b) copper

(c) chromium

(d) aluminium

9. Boojho's uncle has set up an electroplating factory near his village. He should dispose of the waste of the factory

(a) in the nearby river.

(b) in the nearby pond.

(c) in the nearby cornfield.

(d) according to the disposal guidelines of the local authority.

10 .Fill in the blanks

(a) The object to be electroplated is taken as _____ electrode.

(b) One of the most common applications of chemical effect of electric current is _____.

(c) Small amount of a mineral salt present naturally in water makes it a_____ of electricity.

(d) Electroplating of _____ is done on objects like water taps and cycle bell to give them a shiny appearance.

11. Answer in one word.

a. A device indicating flow of electric current in a circuit ._____

b. A lighting device that glows even with a weak electric current ._____

c. The type of electricity created due to rubbing of two bodies_____

d. Positively charged ions which get attracted to the negative electrode._____

e. Process of depositing a thin layer of metal on another with the help of electricity._____

f. A solution that conducts electricity._____

g. Metal rods/plates through which current enters or leaves an electrolyte._____

12. Fill in the blanks.

a. _____ charges repel each other .

b. Table salt mixed in water acts as _____ in elecytrolysis .

c. In electrolysis , metal to be coated acts as an _____ .

d. Impurities in water generally _____ its conductivity.

e. The longer lead of LED is always connected to the _____ terminal of the battery .

f. The flow of conventional current is in the _____ direction to the flow of electrons.

g. Electrolysis occurs when electrolyte is in the _____ state.

h. In electrolysis of water, hydrogen is formed at the _____ .

i. An electric current brings about chemical changes in most conducting _____.

j. In electrolysis of copper sulphate solution, copper is deposited at _____ electrode.

3. Tick the correct option(s):-

(i) If the gap in an electric circuit is filled with a liquid, the current in the circuit
a. flows in some cases and not in others

b. never flows.

c. always flows

d. flows only in case of distilled water

(ii) For electroplating an iron rod with copper, we use

a. iron sulphate solution to deposit iron on copper

b. copper sulphate solution to deposit iron on copper

c. copper sulphate solution to deposit copper on iron

d. iron sulphate solution to deposit copper on iron

(iii) A dry cell converts chemical energy into

a. mechanical energy

b. heat energy

c. electrical energy

d. none of these

(iv) An object with excess of electrons
a. negatively charged

b. positively charged

c. neutral

d. charged but sign of charge cannot be predicted

(v) Which of the following is not a conductor of electricity?
a. brine water
b. tap water
c. distilled water
d. sea water

Assignment 14.2 (to be done in the notebook)

1. A simple circuit (tester) is shown. It does not work. What could be the possible reasons?

2. Mention 3 devices which can be used to test the conductivity of liquids.

3. Give 2 examples each of acids, bases and salts?

4. What are the 3 possible chemical changes which may occur when electric current is passed through a conducting solution?

5. What were the observations of William Nicholson when the electrodes were immersed in water?

6. How can the addition of salt in distilled water change its conductivity?

7. How can you identify the terminals of a cell kept in a concealed box when the other two ends of wire connected to the cell are inserted in a potato?

8. Name three forms of energy into which electric energy can be converted

9. Where is chromium plating done and why? Why are iron objects electroplated with zinc?

10. Can a wooden object be coated with a metal by electroplating? Give reason for your answer.

Assignment 14.3 (to be done in the smart skill)

Give reasons for the following:-

1.We should not touch electrical appliances with wet hands.

_____

_____

2.Common salt does not conduct electricity but salt solution does.

_____

_____

3.LED has been used rather than normal bulb to test the conductivity of liquids.

_____

_____

4.Tin cans used for storing food are made by electroplating tin onto iron.

_____

_____

5.Bridges and automobiles made of iron are given a coating of zinc.

_____

_____

6.Artificial jewellery is coated with a layer of gold or silver.

_____

_____

7.Kitchen gas burners are electroplated with chromium.

_____

_____

Chapter – 4

MATERIALS: METALS AND NON-METALS

LEARNING OBJECTIVES/ OUTCOME: By the end of the lesson, students will be able to

- Understand the concept of metal and non-metals
- Identify common metals and non metals
-
- Write the chemical formula of compounds
- Differentiate between metals and non- metals
- Understand the physical and chemical properties of metals and non metals.
- Conduct experiments to show the physical and chemical properties of metals and non metals.
- Write the simple chemical reaction
- Explain the uses of various metals.
- Apply the concepts learnt to use metals in daily life.
- Methods to prevent metals from corrosion.

Activities-

1. To observe common metals and non metals.
2. To demonstrate the physical properties of metals and non-metals – Sonority, malleability, ductility, conductivity, luster
3. To show the conditions necessary for rusting.
4. To show the reactivity of some metals with water, dilute acids.
5. To show that graphite is a good conductor of electricity.
6. To demonstrate displacement reactions using different metals.

Smart notes

Metals-Metals are the elements which form positive ions by losing electrons. For e.gAluminium, Sodium

Non-metals- Those elements which form negative ions by gaining electrons. For e.ghydrogen,oxygen

Metalloids-Elements which show the properties of both metals and non-metals.Fore.gBoron,Silicon,Germanium

Uses of metals-

Copper-Being ductile and an excellent conductor of electricity,it is used in making electrical wires.As it is a good conductor of heat, it is used to make bottoms of cooking utensils and in making alloys such as brass and bronze

Aluminium-As it is malleable, it is used to make foils which are used for packaging food stuffs.Being a good conductor of electricity, it is used for making electrical wires and in making alloys such as Alnico,magnalium and duralium.

Iron-Alloys of iron are used for making buildingsironsheets,bridges,iron bars etc

Silver – Amazingly the largest uses of silver is making photographic paper and film.

Titanium- it is a strong and light weight metal.It withstands very high temperature.Titanium pins are used in skeletal surgery and in joint replacement surgeries.

Gold-it is used in space shuttles. Satellites are coated with an extremely thin layer of gold.

It is also used for making Jewellery.

Uses of non-metals-

Hydrogen- is used in the manufacture of Ammonia by Haber process

Hydrogen is used in welding metals. Liquid Hydrogen is used as a rocket fuel.

Sulphur-is used in the manufacture of Sulphuricacid.Sulphur is used in making dyes, gun powder and in fireworks. It is also used as a fungicide and germicide for destroying bacteria and fungi.

Carbon in the form of graphite is used for making the electrodes of electrolytic cells and dry cells.

Nitrogen is used in making explosives (TNT and nitroglycerine)

CHEMICAL PROPERTIES OF METALS AND NON-METALS: Metals and non-metals differ from each other in their chemical properties also.

1.**Reaction of Metals with Oxygen**: When metals react with oxygen, they form metal oxide

Metal + Oxygen → Metal oxide

Metal oxides so formed are basic in nature. Some of the metal oxides react with water to form alkalis. Metal oxides, being basic, turn red litmus blue. Similarly, some other metals such as sodium and potassium react with oxygen even at room temperature to form basic oxide and catch fire.

$4Na + O_2 \rightarrow 2Na_2O$

To prevent this reaction, sodium and potassium are stored under kerosene oil.

Non-metals react with oxygen to form acidic oxides. These oxides are acidic in nature and turn blue litmus red. • Carbon reacts with oxygen (of air) and forms carbon dioxide which is acidic in nature.

$C + O_2 \rightarrow CO_2$

• Sulphur is also a non-metal. When sulphur is burned in air, it reacts with the oxygen (of air) to form an acidic oxide called sulphur dioxide. Sulphur dioxide is a pungent, suffocating gas.

$S + O_2 \rightarrow SO_2$

A solution of sulphur dioxide in water turns blue litmus to red, indicating that sulphur dioxide is acidic in nature. When sulphur dioxide is dissolved in water, it forms sulphurous acid.

$SO_2 + H_2O \rightarrow H_2SO_3$

2.**Reaction of Metals with Water:** Metals react with water to form a metal hydroxide or metal oxide and hydrogen gas. Some metals react with cold water, some react with hot water and some react with steam depending upon their chemical reactivity.• Sodium, potassium and calcium react vigorously with cold water and form their respective hydroxides and release hydrogen gas.

$2K + 2H_2O \rightarrow 2KOH + H_2$

• Magnesium reacts with hot water to form magnesium hydroxide and hydrogen.

$Mg + 2H_2O \rightarrow Mg(OH)_2 + H_2$

• Aluminium reacts with steam to form aluminium oxide and hydrogen.

$2Al + 3H_2O \rightarrow Al_2O_3 + 3H_2$

Lead, copper, gold, platinum do not react with water or steam.

Reaction of Non-metals with Water:Non-metals do not react with water or steam.

3. Reaction of Metals with Dilute Acids

Metals react with dilute acids to form a metal salt and hydrogen gas. A salt is formed by displacing hydrogen from dilute acids. Only less reactive metals such as copper, silver, gold do no displace hydrogen from dilute acids, as they are less reactive than hydrogen.

$2 Na + 2HCl \rightarrow 2NaCl + H_2$

$Mg + 2HCl \rightarrow MgCl_2 + H_2$

Non-metals generally do not react with acids.

4.Reaction of Metals with Bases

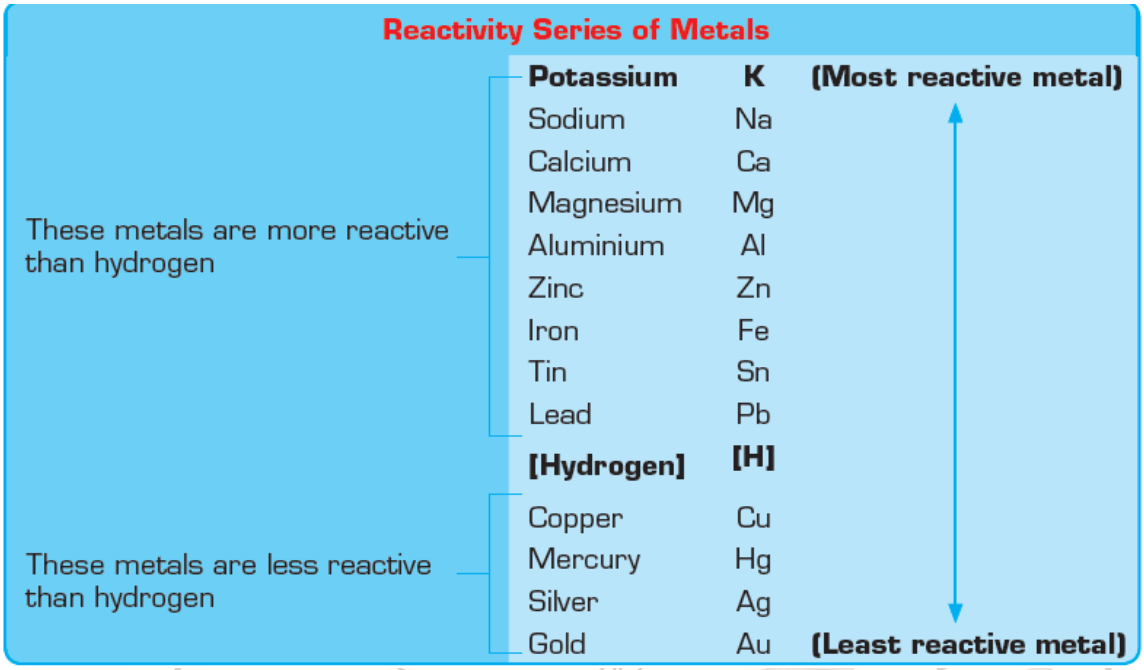
Some metals such as zinc, aluminum react with sodium hydroxide or potassium hydroxide to form salt and hydrogen gas

Reaction of Non-metals with Bases -Reaction of non-metals with bases is very complex.

5.DISPLACEMENT REACTIONS—THE REACTIVITY SERIES OF METALS

The tendency of an element to react with other substances to form compounds is known as its **reactivity**. All metals do not have the same reactivity. On the basis of reactions of metals with oxygen, water and acids, metals have been arranged in a series according to their chemical reactivity as shown in. The arrangement of metals in the order of decreasing reactivity is called reactivity series of metals **(**or activity series of metals**)**. In the reactivity series, the most reactive metal, that is, potassium is placed at the top and the least reactive metal, that is, gold is placed at the bottom.

A reaction in which a more reactive metal displaces a lesser reactive metal from the aqueous solution of its salt is known as displacement reaction.



Well here is an acronym used to learn reactivity series

Police - potassium
Sergeant - sodium
Charlie - calcium
M - magnesium
A - aluminium
Z - zinc
I - iron
N - nickel
T - tin
L - lead
H- hydrogen
Caught - copper
Me - mercury
Stealing - silver
Gold - gold Plates - platinum

So it basically reads `

PoliceSergeant Charlie M A Z I N T L H Caught Me Stealing Gold Plates'

METALS AND NON METALS

Activity 1

Aim- To prove that metal oxides are basic while non metal oxides are acidic in nature.

Material required- magnesium ribbon, sulphur powder, blue and red litmus paper, burner, distilled water

Theory- oxides of metals form bases when dissolved in water while those of non metals form acids.

Procedure-

_____

_____

_____

_____

Observation-

Colour of blue litmus in the solution of magnesium oxide- _____

Colour of red litmus in magnesium oxide solution- _____

Colour of blue litmus in sulphur dioxide solution- _____

Colour of red litmus in sulphur dioxide solution- _____

Result-

_____

_____

MATERIALS: METALS AND NON-METALS

Assignment 1(to be done in the smart skill)

1. Which of the following metals catch fire on reaction with air?

A. Magnesium

B. Manganese

C. Potassium

D. Calcium

2. When MgO is dissolved in water, Mg(OH)2 is obtained. The solution thus obtained is ___ in nature.

A. amphoteric

B. alkaline

C. neutral

D. acidic

3. Identify the non-metal which exists in a liquid state in room temperature 25◦C.

A. Aluminium

B. Mercury

C. Iodine

D. Bromine

4. Which of the following pairs of compounds undergo displacement reaction when they react with each other?

A. Cu and AgNO3 solution

B. Ag and FeSO4 solution

C. Cu and NaCl solution

D. Mg and NaCl solution

5. A reaction in which a more reactive metal replaces a less reactive metal from its salt solution is called a/an _____ reaction.

A. combination

B. displacement

C. double displacement

D. addition

6. Food cans are coated with tin and not with zinc because:

A. Zinc is less reactive than tin.

B. Zinc is more reactive than tin.

C. Zinc has a higher melting point than tin.

D. Zinc is costlier than tin.

7. When sulphur reacts with oxygen, the oxide formed is ___ in nature.

A. alkaline

B. neutral

C. basic

D. acidic

8. When zinc reacts with dilute sulphuric acid, a salt is formed with the release of a gas. The gas produced during this puts off a burning candle with a pop sound. The gas evolved during this reaction is:

A. sulphur dioxide

B. oxygen

C. hydrogen

D. hydrogen sulphide

9. The property by which metals can be beaten into sheets is known as ___

A. ductility

B. sonority

C. lusture

D. malleability

10. Which of the following can be beaten into thin sheets?

A. Zinc

B. Phosphorus

C. Sulphur

D. Oxygen

11. A substance is said to be sonorous if it _____.

A. conducts heat

B. conducts electricity

C. conducts water through metal pipes

D. produces a ringing sound when beaten

12.. Which of the following statements is false?

A. Carbon is the most malleable metal.

B. Copper is a good conductor of electricity.

C. Aluminium is a good conductor of heat.

D. Bromine is the only liquid non-metal.

13. Which of the following is a non-metal but is lustrous?

A. Carbon

B. Mercury

C. Iodine

D. Fluorine

14. Sodium metal is dipped in which of the following substances for storage?

A. vaseline

B. kerosene

C. petrol

D. sulphuric acid

15. Which of the following order is correct for the reactivity of metals?

A. Na > Au > Fe > Mg

B. Na > Mg > Fe > Au

C. Mg > Fe > Na > Au

D. Mg > Na > Fe > Au

Q16.Fill in the blanks-:

a. White phosphorus is a highly _____ non- metal.

b. Pencil lead is made up of _____ .

c. Gold is _____ malleable and ductile .

d. The elements which show properties of both metals and non- metals are called _____ .

e. _____ is a reactive non-metal which catches fire in air.

f. _____ and _____ are noble metals.

g. Non metal that has lustre is_____ .

h. Sulphur is a _____ colored powder.

i. _____ is anon metal used in water purification.

j. _____ and _____ are soft metals which can be cut with a knife or a blade .

k. Bromine is the only _____ which is a _____ at room temperature.

l. Non metals _____ when struck with a hard material.

m. The non metal used in jewelry _____ .

n. Melting point of most metals is _____ than non metals .

o. The property which allows metals to be hammered into their sheets is _____ .

p. The property which allows metals to be drawn into wires is _____ .

Q17. Write true or false

a) Sodium metal can be cut with a knife.

b) Oxygen has antiseptic properties

c) Sulphur is lustrous non metal.

d) Oxygen gas is used to preserve food.

e) Zinc metal can displace copper from copper sulphate solution.

f) Iodine is a non – metal , still it shows lustre .

Q18. Choose the correct option for the following-

i. Iron can displace _____ from its salt solution.

a. Zinc b. Sodium c. Potassium
d. Copper

ii. Which one of the following is non metal?

a. Zn b. Al

c. Fe d. N

Q.19 Find the words listed below from the word search and answer the questions that follow :-

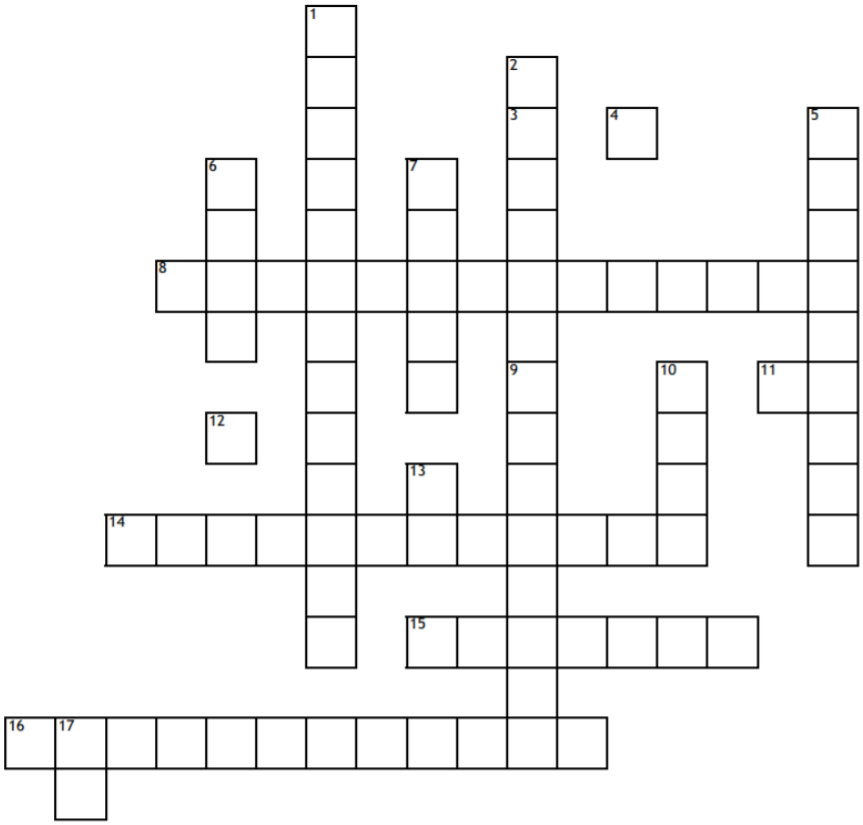
h	n	t	l	l	e	l	e	m	m	o	g	s	f	h
u	m	t	n	l	s	t	u	u	r	e	r	h	d	t
o	e	c	n	t	n	i	i	m	o	e	n	e	n	g
i	e	l	t	i	n	s	u	o	p	o	h	n	l	g
o	n	a	b	i	s	i	e	p	a	d	g	o	r	h
m	s	e	m	a	c	u	o	r	l	h	a	u	t	e
a	x	u	t	l	e	c	d	l	o	g	n	h	b	b
s	l	o	a	e	e	l	i	e	y	a	a	o	t	e
a	p	c	a	a	s	s	l	s	d	n	n	s	n	a
a	n	c	o	t	i	i	e	a	t	h	r	t	m	i
a	i	i	r	f	t	s	e	e	m	a	b	s	o	s
s	c	e	e	d	d	l	s	s	y	a	a	e	e	d
h	l	t	c	n	c	r	a	c	t	e	d	y	o	e
t	t	p	t	r	e	r	o	m	u	i	n	a	r	u
o	y	r	u	c	r	e	m	p	n	y	p	e	o	m

Words to find: Aluminium, Calcium, Copper, Gold, Malleable, Mercury, Potassium, Uranium.

Use the words you find to complete this passage:

1. _____ is the metal used to make drinks cans
2. The metal that is needed for healthy bones and teeth is _____
3. The metal that is used in thermometers is _____
4. _____ is the metal used for electrical wiring
5. The metal used to produce nuclear power and is radioactive is _____
6. A shiny unreactive metal used to make jewellery is _____

Metals and nonmetals Cross word



Across 3. oxygen 4. Nitrogen 8. magnesium + oxygen 9. carbon 11. gold
14. metals have a high 15. non metals are fragile or 16. non metals can burn to form

Down 1. carbon + oxygen

2. sodium + chlorine

5. the smallest particle of many compound are called

6. metals are good conductors of.....

7. non metals are mostly solids and

10. non metals are poor conductors of

12. Hydrogen

13. silver

17. copper

Assignment 2 (To be done in the notebook)

Q1.List three uses of metals in your surroundings.

Q2. How will you confirm that the evolved gas formed in the reaction between sodium and water is hydrogen?

Q3.A piece of magnesium is put in a test tube containing hydrochloric acid. Explain the reaction with the help of equation.

Q4.Give reasons for the following :

a. Silver chloride solution changes its colour when zinc pallets are put into it .

b. Iron is not used in jewellery making .

c. Metal oxides are called basic oxides.

d. Aluminium is preferred for making cooking utensils .

e. Silver does not combine easily with oxygen but silver jewellery tarnishes after sometime .

f. Some metals corrode whereas other do not .

Q6.Mr. Sharma was trying to identify an unknown element `X'. When he placed it in dilHCl, a reaction occurred and brisk effervescence was seen. Answer the questions which follow:-

i. Is the element given metal or a non-metal?

ii. Name one element which will show this reaction.

iii Give balanced chemical equation for the above mentioned reaction

Q7.Which metal turns green over a period of time and why?

Q8.Why does silver gets tarnished over a period of time?

Q9.Give reason and justify?

a. Bells are not made out of non metals.

b. Tunsgsten is used as a filament in incandescent bulbs.

c. Stainless steel is preferred over iron for making surgical instruments.

d. Diamond is used in cutting glasses

e. Wires cannot be drawn from material, such as stone and wood.

Q10. Give two uses of sulphur in chemical industry.

Q11. What is a displacement reaction? Explain with an example.

Q12. Some iron nails were stored in air tight container with silica gel in it and some were left in a test tube outside in the rainy weather.

i. What do you think will happen to the two set of nails and why?

ii. Which way would you prefer to keep iron nails?

iii. Define the process. Give the equation for the above reaction

Chapter - 4

SYNTHETIC FIBRES AND PLASTICS

LEARNING OBJECTIVES/ OUTCOME: By the end of the lesson, students will be able to

- Classify material as natural or synthetic.
- Differentiate between various types of fabrics available.
- Use the concepts learnt to make the correct selection of material for various occasions.
- Be able to read the instructions on a new garment and handle it carefully.
- Understand the plastics and its different uses
- Differentiate between the thermoplastics and thermosetting plastics
- Understand the harmful effect of plastic
- Use and dispose off plastics responsibly.
- Make a distinction between a new and recycled plastic.
- Be familiar with 4 Rs- reduce, reuse, recycle and restore.

Understand why plastics are used to cover handle of utensils, covering of wires

Activities-

1. To compare the tensile strength of synthetic and natural fibers.
2. To study the thermal conductivity / electrical conductivity of different materials
3. To determine water absorbing capacity of different fibers.
4. To study the effect of flame on different types of fibers.
5. To collect some items from surroundings and classify them as natural or synthetic material.

Videos to be shown in the class

1. Different types of fibers
2. Preparation of rayon thread in the lab
3. How are clothes made
4. Fire fighting clothing
5. Different types of plastics.
6. Pollution due to plastics.

SYNTHETIC FIBERS AND PLASTICS
NOTES

Fibers are classified into two types-

a. Natural fibers- these are obtained from nature. Ex- jute, cotton, silk, wool etc.

b. Synthetic fibers- They are obtained by chemical reactions in factories. Ex- nylon, polyester, rayon, terycot etc.

Advantages of synthetic fibers over natural fibers-

1. Easily and abundantly available in a variety of colours and designs.

2. Are strong, light and durable.

3. Do not bleed colour in water.

4. High tensile strength (ability to withstand external force without breaking)

5. Drip, dry, ie. They absorb very little water.

6. Not attacked by moths and insects.

7. Wrinkle free and do not require much maintenance.

8. Affordable cost.

Disadvantages of synthetic fibers-

1. They are non biodegradable.

2. Melt on heating and stick to the body.

3. Non porous, do not absorb sweat, uncomfortable in summers.

4. Release toxic fumes on burning.

Preparation of Synthetic fibers-

Monomer- It is a single unit which is combined repeatedly to form a long chain compound called polymer. Ex Monomer ethene combines to form polymer polythene.

Polymer- large molecule formed by the combination of many monomer units. Ex polythene

Polymerisation- The process by which many monomer units combine together to form a polymer is called polymerization.

Types of synthetic fibers-

Rayon

- Rayon is formulated from natural resources like wood pulp, but still it is regarded as synthetic or man-made fiber having characteristics similar to silk. It is also called regenerated fiber.
- It is cheaper than silk.
- It is also termed as artificial silk.
- It can be easily woven down like natural silk and can be dyed in diverse vibrant colours.
- It is a good moisture absorbent and comfortable to wear.
- It is quite soft to skin with restrained dry strength.
- It does not possess the property of resiliency due to which they are easily prone to get wrinkles.
- For instance, rayon in accompany with cotton is used to make bed sheets. It is also used to make shirts, sarees.

Nylon

- This is the regarded as the first entirely synthetic fiber. The term is obtained from New York and London.

- In 1931 this fiber was formulated from coal, water and air for the first time.
- It is an elastic, light weighted and strong fiber with the characteristic of being very lustrous, semi lustrous or even dull.
- It is stronger than a steel thread of same thickness.
- This is a high tensile strength fiber with good elasticity and is easy to wash.
- This fiber finds use in a variety of purposes for instance, in making ropes, seatbelts, toothbrushes, sleeping bags, tents etc.

Polyester

- This fiber derived its name from a combination of two commonly known words namely polymer - having many parts and -ester - a chemical compound due to which fruits get their names.
- It is a durable fiber possessing the characteristics of resiliency due to which they are resistant to wrinkles.
- They are also impervious to most chemicals, shrinking, stretching.
- It can be used for the purpose of insulation by developing hollow fibers.
- It is used in making shirts, trousers, jackets, curtains and bed sheets, sarees, mouse-pads, ropes, fabrics for conveyor belt, insulating material as well as cushioning material in pillow.

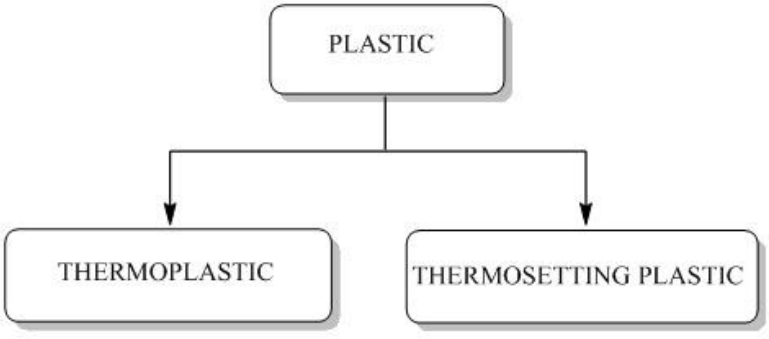
Polyester can further be classified into Terylene and PET.

Acrylic

- This synthetic fiber is formulated from a polymer called polyacrylonitrile.
- It is lightweight, soft, warm, and has resemblance with wool. Wool formulated from natural sources are quite expensive whereas this synthetic fiber is an inexpensive substitute for natural wool.
- It is also impervious to moths, oils, chemical substances, extremely resistant to worsening from sunlight exposure.
- Due to their resemblance with wool they find extensive use in making sweaters, tracksuits, linings for boots and gloves, equipping fabrics and carpets.

Plastics- A plastic is a synthetic material which can be molded or set into desired shape when soft and hardens on cooling.

Classification of plastics

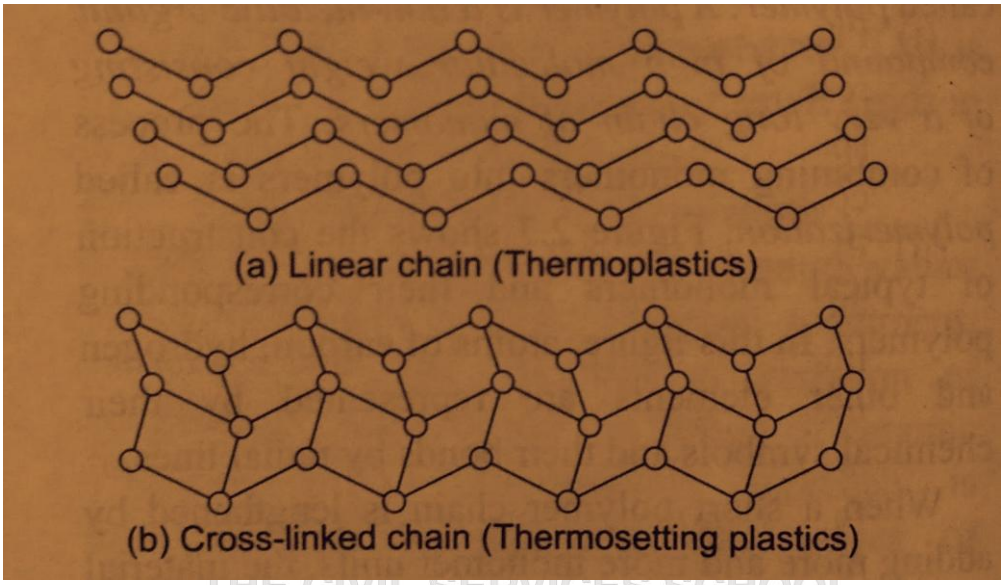


THERMOPLASTICS:

- This category of fiber gets easily deformed on exposure to heat and can also be easily bent.
- They are melt process able, which means that they are first heated, formed, and then cooled in their final shape.
- Polyethylene, Polypropylene, Polystyrene, and PVC are some of the examples of these kind of plastics.
- They find extensive use in making toys, electrical insulator and can be polished well, hence often used in manufacturing vehicle windows and light covers.

THERMOSETTING PLASTICS:

- This category of plastic once solidified during the molding process, cannot be softened back. Due to the reason that the units acquire three-dimensional cross-linked structure with strong covalent bonds for the most part that tends to preserve their strength and structure even on exposure to heating.
- If the plastic is exposed to long term heat, it may get charred.
- Bakeliteand, melamine are the examples of these kind of plastics.
- Bakelite being the poor conductor of heat and electricity is used for making electrical switches and handle of several utensils. Melamine due to its resiliency to fire and tolerance to heat is extensively used to make floor tiles, kitchenware and fabrics used by firemen that can resist fire.



Characteristics of plastics

Plastics possess following unique characteristics:

- They have lighter weight but possess good strength.
- They are inexpensive and hence finds extensive use in several household industries.
- They are non- reactive and hence are resistant to corrosion.
- They are durable and hence can be molded into any shape and size.
- They are poor conductor of heat and electricity for which they are being extensively used in manufacturing handles of electrical appliances, utensils, switch boards etc.

Disadvantages of plastics-

1. They are non biodegradable.

2.These kind of materials when thrown with garbage persists over there. When animals feed on that garbage they feed on those materials too. Plastics cause the main threat to the animals feeding on garbage as they choke the respiratory tract of these animals. In addition to this it also forms a lining on the stomach and can even cost on their lives.

3. In addition to this these wastes even clog the drains, and sometimes even make the spread dirtiness all around in the public places.

Uses of plastics

- In addition to the above mentioned uses of plastic, they are effusively used in biomedical industry. They are extensively used for packaging tablets, threads for stitching, gloves and several medical instruments.
- They are also used to manufacture cookware due to their resistance to heat and electricity.
- Teflon is a plastic with a unique property. No water or oil sticks to this kind of plastic and hence used in making cookware.

Biodegradable and Non- biodegradable Materials

Biodegradable wastes	Non-biodegradable wastes
1. These can be broken down into simple, non-poisonous substances by the action of micro-organisms in nature	1. These cannot be broken down into simple, non-poisonous substances by the action of micro-organisms in nature
2. They can be recycled naturally as well as by man and their products do not pollute the environment	2. They cannot be recycled naturally as well as by man and their products cause environmental pollution.
3. The wastes are made up of natural ingredients	3. The wastes are made up of synthetic materials
4. They can produce useful products after biodegradation	4. They remain unchanged chemically as they are non- biodegradable
5. They do not disturb the ecological balance in nature	5. Most of the time they disturb the ecological balance in nature
6. They persist for small time intervals in the environment	6. They persist for longer time intervals in the environment
7. Examples- paper, cowdung, wood crumbles etc.	7. Plastic bags, synthetic fibres, cans etc

Assignment 3.1

1. Identify the product based on the given features.

I. It is a man-made product.

II. It has a linear arrangement of monomer units.

III. It is used for making goods like toys, combs, containers, etc.

A. Lycra

B. Rayon

C. Thermosets

D. Thermoplastics

2. _____ is the first fully synthetic fiber.

A. Acrylic

B. Polyester

C. Nylon

D. Rayon

3. Identify the synthetic fiber which resembles wool.

A. Rayon

B. Terylene

C. Nylon

D. Acrylic

4. Which of the following fibers is used for making parachutes?

A. Plastic

B. Terelyne

C. Nylon

D. Steel

5. One of the advantages of nylon over rayon is that nylon:

A. Is wrinkle free.

B. Has low elasticity

C. Is a natural fibre

D. Is a good conductor of electricity

6. Fibres of _____ resemble that of silk and hence, it is popularly known as 'artificial silk'.

A. acrylic

B. polyester

C. rayon

D. nylon

7. Firefighters' uniform is coated with a plastic that is fire resistant. Identify the plastic from the given options.

A. Teflon

B. Melamine

C. PET

D. Polyester

8. Identify the type of plastic that can best be used to make electrical switches.

A. PVC

B. Polythene

C. PET

D. Bakelite

9. Modern non-stick cookware and the flat end of an electric iron has a coating of a polymer. Identify the name of the polymer.

A. PVC

B. Rayon

C. Teflon

D. Polyester

10. Select the correct option from the given statements.

A. Polymers cannot form fibers

B. Polymers can be both natural and synthetic

C. Polymer is a natural substance

D. Polymer is a synthetic substance

11. Assertion: Acrylic fibers are used in making socks and shawls.

Reason: Acrylic fibers are a replacement or woolen fibers.

A. Both assertion and reason are true and the reason is the correct explanation of assertion.

B. Both assertion and reason are true but the reason is not correct for the assertion.

C. The assertion is true but the reason is false.

D. The assertion is false but the reason is true.

12. Pickles are stored in plastic bottles mainly because they are:

A. non-biodegradable

B. good insulators

C. durable

D. non-reactive

Q14. Match the following column of A with those of column B

Column A	Column B
(a) Nylon	(i) to make bed sheets
(b) Cotton	(ii) synthetic fibers
(c) Rayon	(iii) to make carpets
(d)Rayon mixed with cotton	(iv) natural fibers
(e) Rayon mixed with wool	(v) obtained by chemical treatment of wood pulp
(f) Cotton is a polymer	(vi) called cellulose

Q15. Fill in the blanks:-

(a) _____ is used in fishing nets.

(b) _____ is a regenerated fibre.

(c) Nylon word comes from two cities _____ and _____ .

(d)_____is a polyester fiber commonly blended with cotton to maketerycot .

(e)_____ synthetic fiber is also called artificial silk .

(f)_____ is the first completely synthetic material used to make stockings.

(g)_____ is the process of linking up large number of monomers.

Q16. True or false statements:

(a) Nylon fibers can be worn in summers.
(b) Like synthetic fibers, plastic is also a polymer.
(c) Synthetic fibers are also called artificial and manmade fibers.
(d) Wood is a non-biodegradable material.

Q17. Write three advantages of rayon.

Q18. Why do uniforms of firemen have coating of melamine plastic?

Q19.What is the reason that acrylic is favored over wool for making sweaters and blankets in winters .

Q20.The waste created by plastic is not environment friendly .Comment.

HOTS:

Q.1Nalini wants to learn swimming. She goes to a store to buy swimming costume and a cap. What kind of material should these be made of and why?

Q.2We have read in the History that early man used to wear leaves or barks of trees to cover himself. When were clothes made of natural fibers invented? Use the Internet and find out about discovery/ invention of natural and synthetic fibers.

Chapter - 5

COAL AND PETROLEUM

LEARNING OBJECTIVES/ OUTCOME: By the end of the lesson, students will be able to

- Define exhaustible and inexhaustible Natural and manmade resources.
- Use the concepts to differentiate between them
- FOSSIL FUELS.
- Be able to understand how fossil fuels are formed and the products obtained after coal and petroleum are processed.
- Will gain knowledge about petrochemicals.
- Understand about PCRA guidelines

Activity –

1. To show the different energy consumption patterns of past and present generations.

2. Videos

a) Formation of coal

b) Formation of petroleum

c) Petroleum refining.

d) Acid rain and global warming

e) Destructive distillation of coal

Assignment 5.1

(To be done in the smart skill)

1. Read the following statements and select the correct ones.

A. Coal, petroleum and natural gas are fossil fuels.

B. Coal and natural gas are exhaustible resources.

C. Coke is used in the manufacture of steel.

D. Fossil fuels are present in limited quantities.

A. A and B

B. A, B, C and D

C. A, B and C

D. A and D

2. The slow process of conversion of dead vegetation into coal is called _____.

A. decomposition

B. evolution

C. carbonification

D. carbonization

3. Identify the gas that is generally produced when coal is burnt in the presence of a lot of air.

A. Carbon monoxide

B. Sulphur dioxide

C. Nitrogen dioxide

D. Carbon dioxide

4. Coke is used in the manufacture of _____.

A. sodium

B. mercury

C. steel

D. potassium

5. Identify the substance which is tough, porous and black. It is almost a pure form of carbon.

A. Crude oil

B. Coke

C. Coal tar

D. Coal gas

6. Which of the following is used in metal extraction?

A. Coke

B. Petroleum

C. Coal gas

D. Coal tar

7. Which amongst the following is used in the manufacturing of perfumes?

A. Coal tar

B. Coal gas

C. Coke

D. Kerosene

8. Which of these is an exhaustible resource?

A. Air

B. Coal

C. Water

D. Sunlight

9. Which of the following is an example of inexhaustible resources?

A. Coal

B. Wind

C. Petrol

D. Diesel

10. In India, which association advises people on saving petrol or diesel while driving?

A. Petroleum Conservation Research Association (PCRA)

B. Coal Conservation Research Association (CCRA)

C. Eco-driving advice

D. Petroleum Conservation Association (PCA)

11. Which amongst the following is a petroleum product which can be used in metalling of roads?

A. Coke

B. Bitumen

C. Coal tar

D. Coal gas

12. Which of these is used as a solvent for dry cleaning?

A. Bitumen

B. Paraffin wax

C. Petrol

D. Kerosene

13. Choose the correct option. Column A contains name of products of petroleum and column B contains their uses.

Match them correctly

ColumnA	Column B
1. LPG (Liquefied petroleum gas) A. Paints, road surfacing	A. 1 – D, 2 – C, 3 – B, 4 – A
2. Petrol B. Fuel for home and industry	B. 1 – B, 2 – D, 3 – A, 4 – C
3. Bitumen C. Ointments, candles, Vaseline etc	C. 1 – A, 2 – B, 3 – C, 4 – D
4. Paraffin wax D. Motor fuel, aviation fuel etc	D. 1 – B, 2 – D, 3 – C, 4 – A

14. Petrol/diesel cannot be saved by:

A. ensuring correct tyre pressure

B. ensuring regular maintenance of the vehicle

C. ensuring the engine is turned on always

D. driving at a constant and moderating speed

15. Which of the following is also known as the 'black gold'?

A. CNG

B. Natural gas

C. Coal

D. Petroleum

16. Which of these is used for making naphthalene balls?

A. Coal tar

B. Petroleum

C. CNG

D. Paraffin

17. Assertion: Coal gas is a mixture of methane, hydrogen and carbon monoxide.

Reason: It is obtained when coal is burnt in excess of air.

A. Assertion is incorrect but the reason is correct.

B. Assertion is correct but the reason is incorrect

C. Both assertion and reason are correct, but the reason is not the correct explanation of assertion.

D. Both assertion and reason are correct and the reason is the correct explanation of assertion.

18. Pavani is very conscious of pollution. So, to reduce the effect of pollution which fuel should she use for her vehicle?

A. Diesel

B. Petrol

C. LPG

D. CNG

Q19. Fill in the blanks:

a. _____, _____ and _____ are grouped under non-renewable sources of energy.

b. The decayed plants slowly turned into coal through a process of _____.

c. The fossil fuels have a high content of carbon and _____ .

d. The _____ of coal produces coke, coal gas, coal tar and ammoniacalliquor .

Q20. Write the full forms of the following abbreviations:

a. CNGb. LPGc. PCRA

Q21. Mark the following statements as True or False.

1. Exhaustible natural resources are present in unlimited quantity in nature and are not likely to be exhausted by human activities.

2. Sunlight and air are examples of inexhaustible natural resources.

3. The amount of inexhaustible natural resources in nature is limited. They can be exhausted by human activities.

Q22. Name the following:

A petroleum product used

a. as a fuel for stoves and lamps

b. for lubricating machine parts

c. for making Vaseline and candles

B. a coal product used

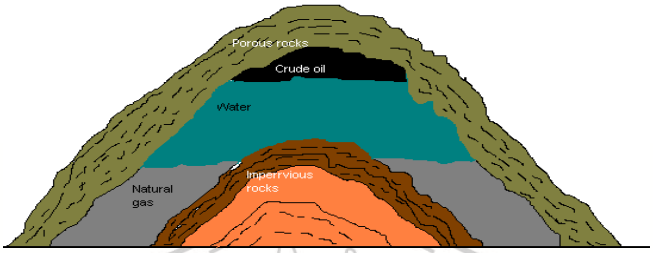
a. in the extraction of metals

b. in the preparation of moth balls

COAL AND PETROLEUM(to be done in the notebook)

Assignment 5.2

Q1.Sridhar made the following diagram of the petroleum and natural gas deposits. Is the diagram correct? If not, correct it.



Q2.What do you understand by the following terms?

A.Non-renewable sources of energy

B.Fossil fuels

Q3.Differentiate between Exhaustible and inexhaustible natural resources

Q4.Explore problems associated with using fossil fuels for energy .Suggest any 3 ways to manage our energy sources wisely.

Q5.Suppose you were the minister responsible for the development of energy resources in an island country with no fossil fuel resources. Which energy sources would you try to develop and why?

Q6.What is black Gold ? Why is it called so ?

Q7. What is destructive distillation of coal? Give the names and the uses of all the products formed.

Q8. Discuss in points how we can employ alternative sources of energy to save fuels for future generation .

Q9. What is petroleum refining ? What is the principle behind it ?

H.O.T.S.

Shazia purchased a new car and sent it for fuelling at the petrol pump. It was a diesel vehicle .The driver got it fuelled with petrol. What should he do now?

Chapter - 6

COMBUSTION AND FLAME

- **LEARNING OBJECTIVES/ OUTCOME:** By the end of the lesson, students will be able to
- Define combustion
- Use the concepts learnt to investigate the conditions necessary to for combustion
- Be able to understand how forest fire is caused.
- Identify inflammable substances and How to handle them.
- Differentiate between various types of combustion
- TO study the structure of flame and to be able to identify the various zones.
- Understand about fuels and the efficiency of fuels.
- Numerical on calorific value.
- Will gain knowledge about global warming and acid rain their causes and effect on the environment.

Activities-

1. To prove that combustion of a candle does not take place below its ignition temperature.
2. To show that the non-luminous zone is the hottest zone of the candle flame.
3. To study the presence of wax vapours in the dark zone of the candle flame.
4. To study the presence of unburnt carbon particles in the luminous zone of candle.
5. To demonstrate that carbon dioxide and water is produced on burning candle.
6. To show that a combustible substance must attain its ignition temperature to burn.

VIDEOS

1. Combustible and non combustible substances.
2. Different types of fire extinguishers.
3. Zones of candle flame.
4. Air pollution.

COMBUSTION AND FLAME

Assignment 6.1 (to be done in the smart skill)

1. Ignition temperature is the lowest temperature at which a substance catches fire. Identify the correct option regarding the ignition temperature of a good fuel.

A. Ignition temperature below room temperature

B. Ignition temperature above room temperature

C. Ignition temperature equal to 100°C

D. Ignition temperature equal to room temperature

2.Combustion of a substance releases heat and ___.

A. oxygen

B. wood

C. light

D. water

3. The suspended particles released by combustion of coal in air may lead to a health disease. Select the correct option.

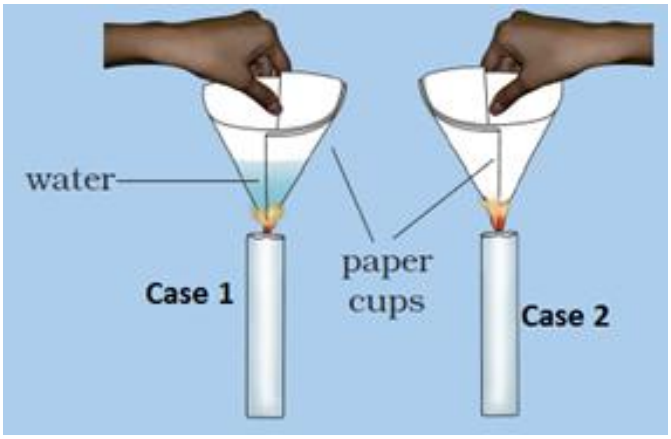
A. Goitre

B. Arthritis

C. Asthma

D. Bone cancer

4. The picture below shows two cases in which a person is trying to burn the paper cup. In case 1, the cup has water in it and in case 2, it is empty and dry. Identify in which of the cases the paper will burn.



A. Case 1

B. Case 2

C. Both case 1 and case 2

D. The paper doesn't burn in both the cases.

5. What is the main chemical component present in striking surface of a matchbox?

A. Potassium chlorate

B. Phosphorus

C. Potassium

D. Graphite

6. An ideal fuel is cheap, readily available, easily combustible and easy to transport. It has high calorific value. It does not produce gases or residues that pollute the environment. Based on the above statements which of the following is closest to being an ideal fuel?

A. Compressed Natural Gas (CNG)

B. Kerosene

C. Petrol

D. Coal

7. When sufficient oxygen is not available, combustion of methane produces _____ gas and water.

A. nitrogen

B. hydrogen

C. carbon monoxide

D. carbon dioxide

8. When a cracker is ignited, a sudden reaction takes place with the evolution of heat, light and sound. Identify the type of combustion?

A. Random combustion

B. Rapid combustion

C. Spontaneous combustion

D. Explosion

9. The combustion reaction which occurs on its own, without any external supply of heat is called as:

A. Explosion

B. Spontaneous combustion

C. Fire

D. Rapid combustion

10. The efficiency of a fuel is expressed in terms of its _____.

A. density

B. calorific value

C. volume

D. purity

11. The SI unit of the calorific value of a fuel is :-

A. N/kg

B. KJ/kg

C. KW/kg

D. J/kg

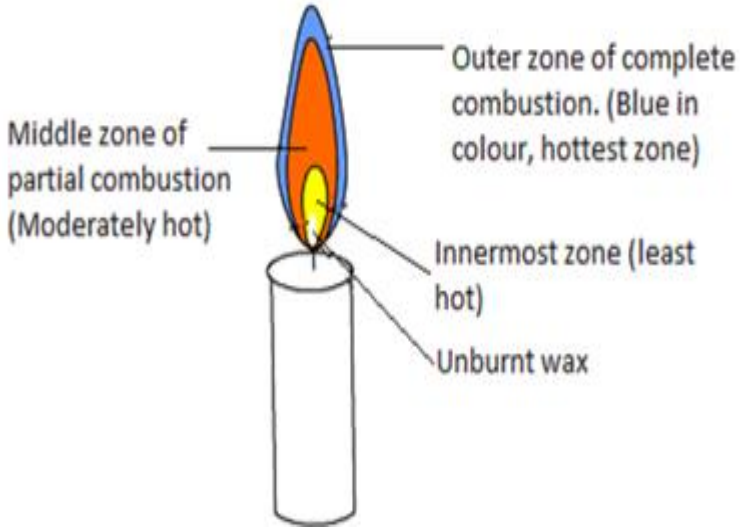
12. The middle zone of a candle flame is also called the zone of _____ combustion.

A. spontaneous

B. rapid

C. partial

D. complete



13. The colour of outer zone of candle flame is _____.

A. orange

B. blue

C. red

D. yellow

14. Arrange the different regions of a flame in increasing order of temperature.

A. Middle region < inner region < outermost region

B. Outermost region < inner region < middle region

C. Inner region < outermost region < middle region

D. Inner region < middle region < outermost region

15. Which of the following factors are essential to ignite a fire?

A. All of these

B. Fuel

C. Air (oxygen)

D. Heat

16. Which of the following should be done to control fire?

A. Increase the oxygen supply

B. Increase fuel supply

C. Reduce the heat supply

D. Reduce the nitrogen supply

17.

The diagram given represents what is called the **fire triangle** which shows that oxygen, heat and fuel in the proper proportions are necessary to create a fire. Reducing or eliminating any or all of these properly can help in containing or stopping the fire.

So in order to stop a fire,

1. Heat should be reduced – this decreases the temperature of fuel below ignition temperature thus stopping the fire.

2. Oxygen should be cut off – lack of Oxygen will stop the combustion.

3. Fuel should be limited – Decreasing the quantity of fuel available for combustion can help contain it.

18. CO_2 extinguishers help extinguish fires by –

A. Cutting supply of nitrogen.

B. Limiting the supply of fuel.

C. Reducing the heat of the surroundings.

D. Cutting the supply of oxygen.

19. Water cannot be used as a fire extinguisher to put out –

A. Burning charcoal

B. Burning cloth

C. Burning oil

D. Burning wood

20. Which of the following cannot be used to extinguish the fire caused by electricity?

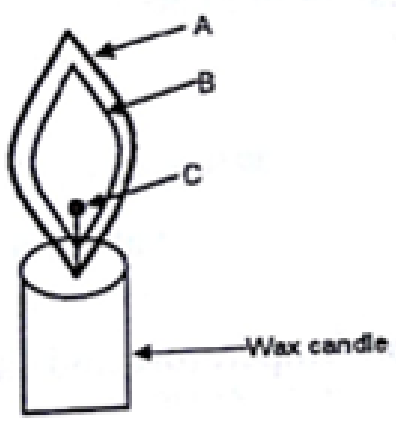
A. Carbon dioxide

B. Blanket

C. Sand

D. Water

21. The different zones of a candle flame are marked by the letters A, B and C.



Which of the following is correct?

A. A is moderately hot

B. A is the hottest part of the flame.

C. C is moderately hot.

D. B is the hottest part of the flame.

Q22.Classify the following as combustible and non-combustible substances:

Paper, sand, alcohol, metal, marble, plastic, nylon, charcoal, candle and petrol

Q23.What kind of combustion is

a) Respiration

b) Burning of white phosphorous

c) Burning of coal in limited amount of air supply

d) Burning of LPG

Q24.Categorise the following fuels on the basis of their physical state:

Petrol, wood, LPG, Kerosene, Biogas, Methane, Hydrogen, coal tar and charcoal

Q25.Complete the following table and draw a neat, labeled diagram showing the three zones of a flame.

Outer Zone	Blue			Adequate oxygen supply		
Middle Zone			moderately hot		Residue	
Inner Zone		No combustion				dark Zone

COMBUSTION AND FLAME

Assignment 6.2 (*To be done in the notebook)*)

Q1.Why is CNG and LPG preferred over other fuels .

Q2. 9Kg of a fuel produces 54000 KJ of energy .Calculate the calorific value of the fuel .

Q3. Give reasons

a) Red buckets containing sand are kept in offices and cinema halls.

b) Kerosene oil catches fire faster than wood

c) Middle zone of candle flame glow with yellow colour.

d) When the clothes of a person catch fire we cover him with a blanket.

e) Smelling agent is added to LPG.

Q4.Calorific value of methane is 50 Kilojoules per gram. What do you understand by this statement?

Q5.Why a candle burns with a flame, whereas a piece of charcoal just glows red when lit?

Q6.Explain your observations giving reasons, what would happen if:

a) A five-rupee coin wrapped in a cloth is held near a lighted match stick?

b) Metals like sodium and potassium are exposed to air?

c) Water is used to extinguish fires caused due to oil spills or electrical short circuits?

d) A wet cloth is made to catch fire?

Q7. Fill in the blanks:

a. Calorific value of a fuel is also known as _____.

b. _____ is a supporter of combustion.

c. Kindling temperature is the temperature at which a combustible substance_____.

d._____ gas helps extinguishing fire.

e._____ is a substance which produces usable heat or energy.

H.O.T.S.

Q1. A car has an engine 800cc. What do you understand by this statement? Find out about the engines of your favourite cars and the type of fuels they run on.

Q2. On a cold winter night, Hari slept in a closed room with a fire place on and all windows closed. What could have happened and why?

Fun With Chemistry (not to be tested)

Leaf Batik

Create leaf batik and use it for a decorative and interesting wall hanging in your room. Batik is a centuries-old craft that uses wax and dye to create patterns on fabric. The shapes of leaves inspire batik designs in this project.

Creating a leaf batik takes a few steps, but the result is well worth the effort.

This is a great craft for kids and adults to work on together. There are more steps to this craft than with some others; a few of the steps are best left to grown-ups, but kids will have fun working on the craft too.

What You'll Need:

- Leaves
- Green crayons
- Cans
- Pan

- Water
- Old paint brushes
- Fabric
- Cold water dye (in two colors that can mix)
- Paraffin wax
- Newspaper
- An iron

Step 1: Gather several leaves with interesting shapes.

Step 2: Use a green crayon to trace the shape of the leaves onto a piece of fabric.

Step 3: With help from an adult, put some peeled, broken green crayons in a can. Then put the can in a pan of boiling water to melt the crayons. *Never melt wax or crayons directly on a stove burner. They can catch fire*.

Step 4: Using an old paintbrush, spread melted crayon into the leaf shape on your fabric. Coat it completely; then give it time to dry.

Step 5: Mix a light-colored cold-water dye with water, according to the instructions on the package.

Step 6: Crumple your fabric and dip it in the dye. Allow it to dry.

Step 7: Melt paraffin wax in a can in boiling water. Paint branch shapes or any other shapes you like with the paraffin onto the fabric.

Step 8: Crumple your fabric and dip it into a darker dye. Allow it to dry.

Step 9: Roll your fabric hard in your hands to break up the wax and peel off as much as you can.

Step 10: Place the fabric between several sheets of newspaper and ask an adult to help you iron it. The iron will melt the wax, which will be absorbed by the newspaper. Replace the newspaper often, until most of the wax is gone.

REVISION ASSIGNMENT TERM 1-CHEMISTRY

Q1. Fill in the blanks :

1._____ is a polyester fiber commonly blended with cotton to make terycot .

2. _____ synthetic fiber is also called artificial silk.

3._____ is the first completely synthetic material used to make stockings.

4._____ is polymers that can be molded into various shapes.

5. _____ is a process of linking up large number of small molecules called monomers.

Q3. What is melamine? State two uses of melamine.

Q4. How can we say, plastic is light, strong and durable?

Q5. Can you suggest some ways by which you can contribute towards reducing the use of plastic material?

Q6. Explain why plastic containers are favored for storing food.

Q7. Define petrochemicals.

Q8. Do polymers occur in nature also? Give examples.

Q9. Write three advantages of rayon.

Q10. Why do uniforms of firemen have coating of melamine plastic?

Q11. Against the name of the following fibres, mention whether they are natural or synthetic :

a)Wool

b)Jute

c)Cotton

d)Melamine

e)PET

f)Nylon

Q12. What happens when metals react with bases?

Q13. What are noble metals?

Q14. Name two metals found in free state.

Q15 .Why is chlorine used in water purification plants?

Q16. Name the best and poorest conductor of heat among metals.

Q17. In which term, the purity of gold is measured and expressed?

Q18. What happens when sulphur dioxide is dissolved in water?

Q19. How many metals and non-metals are present among 116 elements?

Q20.List the important uses of metals in daily life.

Q21 Aditya was trying to identify an unknown element`**X'**. When he placed it in dil. HCl, a reaction occurred and brisk effervescence was seen. Answer the questions which follow:-

- Is the element given metal or a non-metal?
- Name one element which will show this reaction.

Give balanced chemical equation for the above mentioned reaction with the above mentioned answer.

Q22. Guess who am I?

1) I am a reactive non-metal. I catch fire as soon as I am exposed to air or water!

2) I am a soft metal and can be cut with a knife or a blade! Oh ya…my name starts with S!

3) I conduct electricity though I am a non-metal and touch me…..oh! I am so soft and slippery!

4) Oh! What a sparkle I have and I am the hardest substance on earth!

5) I am a non-metal and I am used in fertilizers to enhance the growth of plants!

REVISION ASSIGNMENT TERM 2

Q1. What is meant by fractional distillation? For which purpose is it used?

Q. 2 Match the items of column A with those in column B.

Column A	Column B
Rock oil	Coke
Black viscous liquid	Petroleum
Porous black residue	Coal tar

Q3. What is destructive distillation of coal? Give uses of all products formed

Q4.In the liquid state hydrogen is used as a fuel in which mode of transport ?

Q5. Why CO_2 is the best fire extinguisher?

Q6. Why does the paper cup containing water not catch fire on heating?

Q7. Why water is not used to control fire involving electrical equipments?

Q8. Explain Why

(a) It is difficult to burn a heap of green leaves but dry leaves catch fire easily.

(b) A matchstick needs to be rubbed against the matchbox.

(c) Red buckets containing sand are kept in offices and cinema-halls.

(d) Water is not used to put off fire caused by burning of petrol.

(e) Petrol cannot be used as a fuel in stoves at home.

(f)A person sleeping in a closed room feels suffocated with burning coal after sometime.

Q9. Differentiate between the following.

a) Rapid and spontaneous combustion.
b) Liquid and gaseous fuels.
c) Coal and coke.
d) Destructive and fractional distillation

Paper for first term revision

Q1.Write **balanced chemical equations** for the following chemical changes-

i. Phosphorus reacts with oxygen to form Phosphorus pent oxide
ii. Sodium metal reacts with oxygen to form Sodium oxide**2**

Q2.How do the methods of plastic disposal cause pollution. (Give 2 points).

Write a one line slogan to raise awareness against the use of plastic bags.

Q3.Choose the correct option for the following-

i.Zinc can displace _____ from its salt solution.

a. Aluminum b. Sodium

c. Potassium d. Copper

ii. Which one of the following is non metal?

a. Zn b. Al

c. Fe d. S

iii.Strands of which fiber are stronger than steel.

a. Rayon b. Nylon

c. Acrylic d. Silk

iv. Which gas is released when a metal reacts with an acid?

a. Oxygen b. Hydrogen

c. Chlorine d. Carbon dioxide

v. The long chain compound formed when monomers combine together.

a. Polymer b. Displacement

c. Malleability d. Photosynthesis

vi. Which of the following is a natural polymer?

a. Nylon b .Plastic

c. Cellulose d. Polyester**3**

Q4.Aditya was trying to identify an unknown element'**s'**. When he placed it in dil. HCl, a reaction occurred and brisk effervescence was seen. Answer the questions which follow:-

- Is the element given metal or a non-metal?

- Name one element which will show this reaction.
- Give balanced chemical equation for the above mentioned reaction3

Q5.While working on a project Rama painted some iron nails with fabric paints while left the rest of the iron nails outside her house in the rainy weather.

i. What do you think will happen to the two set of nails and **why**?(mention specific conditions)
ii. Define the process. Give the equation for the above reaction.
iii. Should you leave your things behind after working with them? What should you do with your things after you have finished working with them? Why?**3**

Q6.Give **reasons** for the following-

i. Galvanisation is done to prevent Iron railings
ii. Thermoplastics are used to make toys, combs etc
iii. Cotton clothes are the right choice for summers.(2 points)
iv. Rayon is called regenerated fibre
v. Bakelite is used in making electrical switches.
vi. Parachutes are made up of nylon1x6=6

Q7.Differentiate between:- (2 points and examples in part i and ii)

i. Biodegradable and non biodegradable substances
ii. Thermoplastics and Thermosetting plastics
iii. Cotton and Nylon fibres2x3=6

Academic Session : 2019- 20

Unit Test II

Subject - Science

Class –VIII

SET-1

Time : 1 hr 30 mins. **MM 40**

General Instructions

- This paper has -3-- printed sides.
- **Read the questions carefully. Marks will be deducted for not following instructions given in the questions**.
- Write question numbers as given in the paper.

Section A **Physics** **MM-13**

Q1. Name the following – 4

a. Two factors that make the earth a special planet.
b. Planets that spin opposite to the direction of the earth**.**
c. Planets between which the asteroid belt is present.
d. Two visible celestial objects in the night sky.

Q2. Distinguish between stars and shooting stars giving two important points of difference. 2

Q3. Mention the important features that describe the surface of the moon. 2

Q4. Draw a neat labelled figure to show the waxing phase of the moon. 2

Q5. Answer the following – 1.5x2=3

a. Artificial satellites are extremely useful to mankind. Mention three important uses of artificial satellites.
b. Draw a neat labelled figure of the constellation that helps you to locate Sirius.

Section B **Chemistry** **MM-13**

Q1 Which of the following is a source of rayon? 1

(a) Wool

(b) PET

(c) Wood pulp

(d) Silk

Q2 Which of the following is not a common property of plastics? 1

(a) Non-reactive

(b) Light in weight

(c) Durable

(d) Good conductor of electricity

Q3 Which of the following groups contain all synthetic substances? 1

(a) Nylon, Terylene, Wool

(b) Cotton, Polycot, Rayon

(c) PVC, Polythene, Bakelite

(d) Acrylic, Silk, Wool

Q4 Fill in the blanks 1

a) A plastic used for making uniform for firemen is _____.

b) A synthetic fiber similar to wool is _____.

Q5 Write any two advantages of synthetic fibers over Natural fibers. 2

Q6 Rohit took with him some nylon ropes, when he was going for rock climbing. Can you tell why he selected nylon ropes instead of ropes made of cotton or jute?(two points) 2

Q7 PVC (polyvinyl chloride) is a thermoplastic and is used for making toys, chappals, etc. Bakelite is a thermosetting plastic and is used for making electrical switches, handles of various utensils, etc. Can you write the major difference between these two types of plastics? (Any two) 2

Q8 Despite being very useful it is advised to restrict the use of plastic. Why is it so? Can you suggest any two methods to limit its consumption? 3

Section CBiology **MM-14**

Q 1. Choose the correct option and write the complete statement in your answer sheet 1

The male reproductive system consists of the

a) ovary, penis, sperm

b) sperm duct, penis, uterus

c) testis, sperm duct, penis

d) testis, oviduct, penis

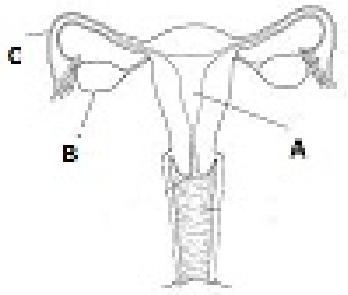
Q2 Complete the following sentences 1+1

a. Like plants, the reproductive parts in animals also produce

_____ which fuse to form a _____

b. In humans _____matured egg is released into the _____.

Q3 3



a) Identify the diagram given above.
b) Label Part A and C
c) What function does Part B perform ?

Q4. a. Define Reproduction 1+2
b. Differentiate between sperm and ovum. Give two point of difference.

Q5. a. Which asexual mode of reproduction is shown by *Amoeba?* 1+3+1
b. Draw a neat and well labelled diagram to show the four stages of the process.
c. What is the importance of reproduction in the life of an organism

Academic Session : 2019- 20
Unit Test II
Subject - Science
Class –VIII
SET -2

Time : 1 hr 30 mins. **MM 40**

General Instructions

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- This paper has --- printed sides.
- **Read the questions carefully. Marks will be deducted for not following instructions given in the questions**.
- Write question numbers as given in the paper.

Section A **Physics** **MM-13**

Q1 Name the following – 4

a. Two visible celestial objects in the night sky.
b. Planets between which the asteroid belt is present.
c. Smallest and largest planets in the solar system**.**
d. The planets that spin opposite to the direction of the earth.

Q2. Draw a neat labelled figure to show the waning phase of the moon. 2

Q3. Mention the important features that describe the surface of the moon. 2

Q4. Distinguish between stars and shooting stars giving two important points of difference. 2

Q5. a. Draw a neat labelled figure to show the constellation that helps you to locate the Pole star. 1.5x2=3
b. Artificial satellites are extremely useful to mankind. Mention three important uses of artificial satellites.

Section B **Chemistry** **MM-13**

Q1 Pick the synthetic fiber out of the following? 1

(a) Cotton

(b) Nylon

(c) Jute

(d) Wool

Q2 Which of the following is not a common property of plastics? 1

(a) Non-reactive

(b) Light in weight

(c) Durable

(d) Good conductor of electricity

Q3 Which of the following groups contain all natural fibers? 1

(a) Nylon, Terylene, Wool

(b) Cotton, Polycot, Rayon

(c) cotton, wool , silk

(d) Acrylic, Silk, Wool

Q4 Fill in the blanks 1

(a) The first fully synthetic fiber was _____.

(b) A plastic used for making crockery is _____.

Q5 Write any two disadvantages of synthetic fibers over Natural fibers. 2

Q6 Why is it advised not to wear synthetic clothes while working in the laboratory? Suggest the type of cloth which should be used giving reason. 2

Q7 How thermoplastics and thermosetting plastics are structurally different explain with the diagram? Give two examples for each of the plastics . 2

Q8 Despite being very useful it is advised to restrict the use of plastic. Why is it so? List any two strategies for plastic waste management . 3

Section CBiology **MM-14**

Q 1. Choose the correct option and write the complete sentence in your answer sheet 1

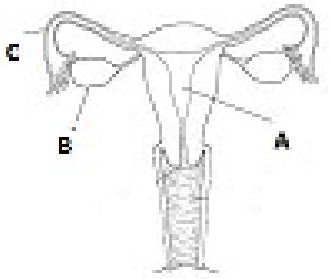
The male reproductive system consists of the

a) sperm duct, penis, uterus
b) testis, sperm duct, penis
c) ovary, penis, sperm
d) testis, oviduct, penis

Q2 Complete the following sentences 2

a. In humans _____matured egg is released into_____.
b. Like plants, the reproductive parts in animals also produce _____ which fuse to form a _____.

Q3 3



a) Identify the diagram given above.
b) Label Part A and B
c) What function does Part A perform?

Q4. 3

a. Define Reproduction
b. Differentiate between sexual and asexual mode of reproduction. Give two point of difference.

Q5. 1+3+1

a. Which asexual mode of reproduction is shown by *Hydra?*
b. Draw a neat and well labelled diagram to show the four stages of the process.
c. What is the importance of reproduction in the life of an organism?

Academic Session: 2020-21
First Term Examination
Subject: __Science _
Class- VIII

Time: 2 Hours **Max marks: 60**
Google form 30 marks
PDF Paper 30 marks

General instructions:

- **Please ensure that you have submitted the Undertaking before beginning the paper.**
- **Use an A-4 sheet to write your answers.**
- **Number each page and mention the total no. of sheets used on the first page with your name , class and section.**
- **The Answer sheets need to be scanned and uploaded as a pdf file in portrait mode.**
- **The writing time is from 8:00 am to 10:00 am.**
- **By 10:15am, the pdf file of the answer sheets needs to be created, attached and submitted. Once submitted, it can't be resubmitted.**
- **Children who avail extra time, may submit the answer sheets by 11:00 am.**
- **All questions are compulsory.**
- **Make sure that you turn in the work in the time frame assigned.**
- **No image to be uploaded.**
- **This paper has _4_printed sides.**

ALL THE BEST !!

MM-30

PHYSICS

MM-10

Q1 State the importance of the following parts of the human eye giving 2 functions of each? **2**

a. Retina
b. eyelids

Q2 Describe the process by which sound is produced by human beings? Write your answer in points. **2**

Q3 Draw a neat labelled diagram, to show the bouncing back of a beam of parallel light rays from a well polished metal sheet? Name the kind of reflection that takes place? **2**

Q4 Vibrations are needed to produce sound. Yet all vibrating bodies do not produce a sound which is audible to human beings but it may be audible to animals. Explain giving a scientific reason why- **2**

A. The sound can be inaudible to human beings?

B. The sound may be audible for animals?

Q5 Saransh celebrated his thirteenth birthday that was hosted with a lot of pomp and show, which included a DJ performance and a variety of delicious food. After a while, Saransh objected to the loud sound and requested the loud speakers to be switched off. His parents were very happy to see his spontaneous reaction. Answer the following questions based on this incident– **2**

a. Mention TWO DIFFERENT and relevant harmful effects that can be experienced by people who are exposed to loud sounds over a long period of time ? (½+ ½)

b . Mention two of the most effective ways to control noise pollution in residential localities?

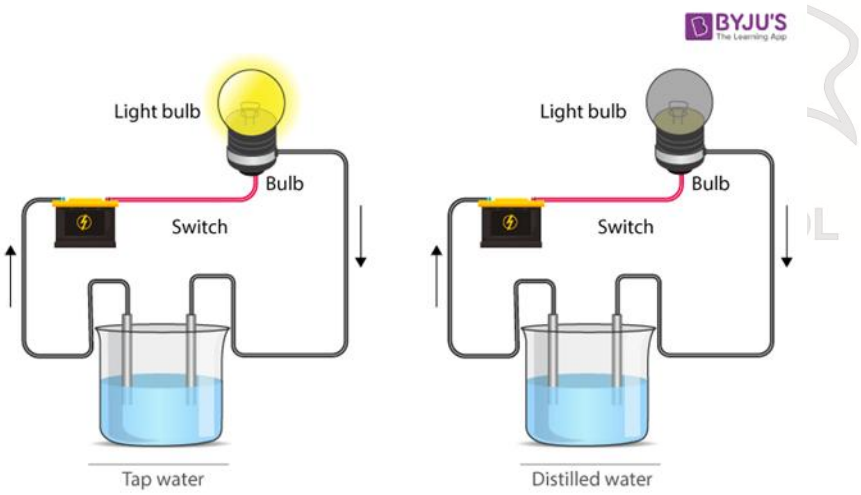
CHEMISTRY **MM-10**

Q6 Name the form of polyester which is replacing materials like glass and used for making bottles and jars. **1**

Q7 Draw diagrams to show the: **1**
(a) linear arrangement of units in plastic.
(b) cross-linked arrangement of units in plastic.

Q8 Which two metals, except chromium, are used for electroplating other metals? **1**

Q9 Explain the following diagrams giving reason **2**



(A) **(B)**

Q10 Write any two properties and two uses of melamine. **2**

Q 11 Riya's father got a transfer to another place. While sorting out the things Riya found many of her clothes of various fabrics were not fitting her or worn-out. She thought of burning them to get rid of them. But her friend Shweta suggested donating it to some charity house so that it can be reused. **3**

(a) What are the two main types of fibres?
(b) Which fabrics are known to be skin friendly and why?
(c)What kind of fabric should be avoided to be worn in the kitchen and Why?

OR

a. Plastics are a hazard to the environment'. Explain this statement by giving 3 reasons.
b. Mention any three steps that you will take as an individual to contribute for plastic free India'.

BIOLOGY **MM-10**

Q12 What are chromosomes and where are they found? State their function. 2

Q13 How does vaccine work in the human body? Why is vaccination important? 3

Q14 a) Draw the diagram of a plant cell and label two structures that would not be present in it if it would have been an animal cell. Also write any one function of the parts labeled. 5(3+2)

b) Give one difference between prokaryotic and eukaryotic cells.

Academic session 2020-21
Unit test 2
Class VIII

Time: 30 min M.M= 10

Instructions-

1. All questions are compulsory.
2. Attempt the questions in correct serial order.
3. Write your name, class and section, roll no. and number of sheets used on the firstsheet.
4. Make a single pdf of the answer sheet in portrait mode and scan and attach the samewith this assignment.
5. Do not forget to turn in your paper.

Q1. The most reactive non metal in air is 1

(a) Chlorine

(b) phosphorus

(c) nitrogen

(d) aluminium

Q2. State the property of metals due to which they are used in making temple bells. 1

Q3. Which of the following pairs of compounds undergo displacement when they react with each other? Give reason for your choice 2

A. Cu and $AgNO_3$ solution
B. Ag and $FeSO_4$ solution
C. Cu and NaCl solution
D. Mg and NaCl solution

Q4. What happens when a magnesium ribbon is heated in presence of air? Give an equation. 2

Q5. Observe the figure carefully and answer the following questions. 2

A. Define the process shown in the figure ?
B. Give the formula and name of the reddish deposit on the article ?

Q6. When zinc reacts with dilute sulphuric acid, a salt is formed with the release of a gas. The gas evolved during this reaction is: 2

A.sulphur dioxide
B. oxygen
C. hydrogen
D. hydrogen sulphide

Give reaction for the above change. How will you test the presence of this gas?