



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

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SYLLABUS FOR THE YEAR 4-5

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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

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^{+} O^{-}

- 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- $\text{Na}^{+} \text{O}_2$
 Na_2O

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

For example- Ca^{2+} O^{-}
 Ca_2O_2 or CaO

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

For example- $\text{Ca}^{2+} \text{SO}_4^{2-}$
 $\text{Ca}_2(\text{SO}_4)_2$ or CaSO_4 (The number 4 here cannot be cancelled). Also, the formula cannot be written as $\text{Ca}_2\text{S}_2\text{O}_8$

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 ending in “ -ide”.

For example-

NaCl- Sodium chloride

NH4OH- Ammonium hydroxide

III The names of radicals consisting of more than one atom remains the same. For example- Carbonate (CO3), 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 Ferrous sulphate (Fe2+), Ferric chloride (Fe3+)

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

- a. Na3PO4
- b. Al(OH)3
- c. CaO
- d. KCl
- e. FeSO4
- f. CuO
- g. NH4NO3
- h. Na2SO4
- i. Mg(HCO3)2
- j. H2S

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) ₃ PO 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**.

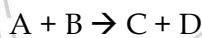
Chemical equations- A chemical equation is a short hand representation of a chemical change. It uses symbols and formulae.

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-



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- $\text{Na} + \text{O}_2 \rightarrow \text{Na}_2\text{O}$

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.- $\text{H}_2 + \text{O}_2 \rightarrow \text{H}_2\text{O}$

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

No. of atoms of H on LHS = 2

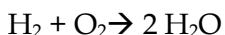
No. of atoms of H on RHS = 2

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.



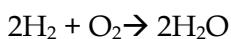
We have not written the RHS as H_2O_2 which also increases the no. of oxygen atoms because that changes the molecular formula and we know that every compound has a definite chemical formula. This means that we can only increase the no. of molecules.

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 = $2 \times 2 = 4$ So, we will now have to increase the no. of H on the LHS.



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

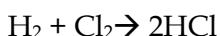
Now, no. of H atoms on both sides is 4 and that of O is 2. The equation is balanced.

Ex - $\text{H}_2 + \text{Cl}_2 \rightarrow \text{HCl}$

No. of H atoms on LHS = 2

No. of H atoms on RHS = 1

Multiplying the RHS by 2,



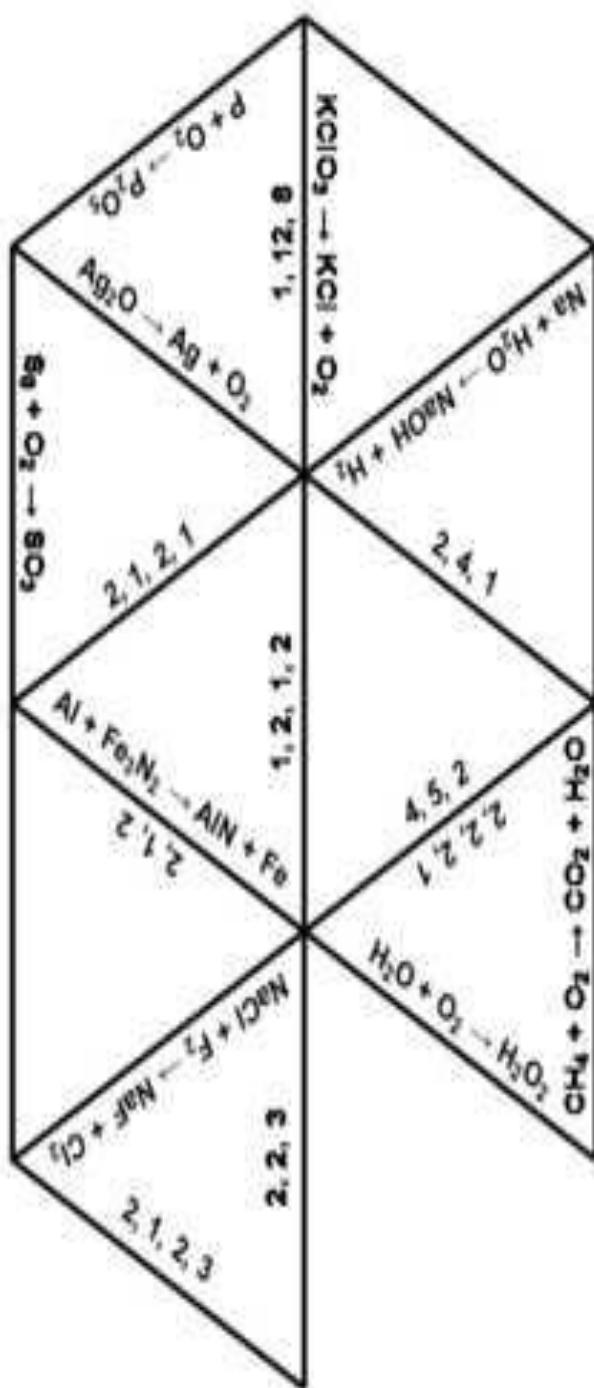
Again, note that RHS cannot be written as H_2Cl as the same changes the molecular formula.

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

Exercise

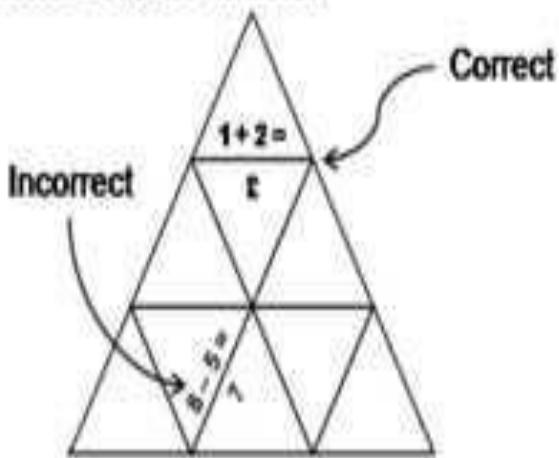
Now, balance the following chemical equations- (to be done in the notebook)

1. $\text{Ca} + \text{O}_2 \rightarrow \text{CaO}$
2. $\text{H}_2 + \text{O}_2 \rightarrow \text{H}_2\text{O}$
3. $\text{Na} + \text{H}_2\text{O} \rightarrow \text{NaOH} + \text{H}_2$
4. $\text{N}_2 + \text{H}_2 \rightarrow \text{NH}_3$
5. $\text{P}_4 + \text{O}_2 \rightarrow \text{P}_2\text{O}_5$
6. $\text{Al} + \text{HCl} \rightarrow \text{AlCl}_3 + \text{H}_2$
7. $\text{H}_2\text{SO}_4 + \text{Fe} \rightarrow \text{Fe}_2(\text{SO}_4)_3 + \text{H}_2$
8. $\text{CH}_4 + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$
9. $\text{Mg} + \text{H}_2\text{SO}_4 \rightarrow \text{MgSO}_4 + \text{H}_2$
10. $\text{K} + \text{H}_3\text{PO}_4 \rightarrow \text{K}_3\text{PO}_4 + \text{H}_2$
11. $\text{Zn} + \text{HCl} \rightarrow \text{ZnCl}_2 + \text{H}_2$



Balancing Chemical Equations

1. Cut the triangle apart.
2. Find the prime factorization of each number.
3. Build a triangle so that each edge has the same answers facing each other.



Chapter – 14**CHEMICAL EFFECTS OF ELECTRIC CURRENT****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.

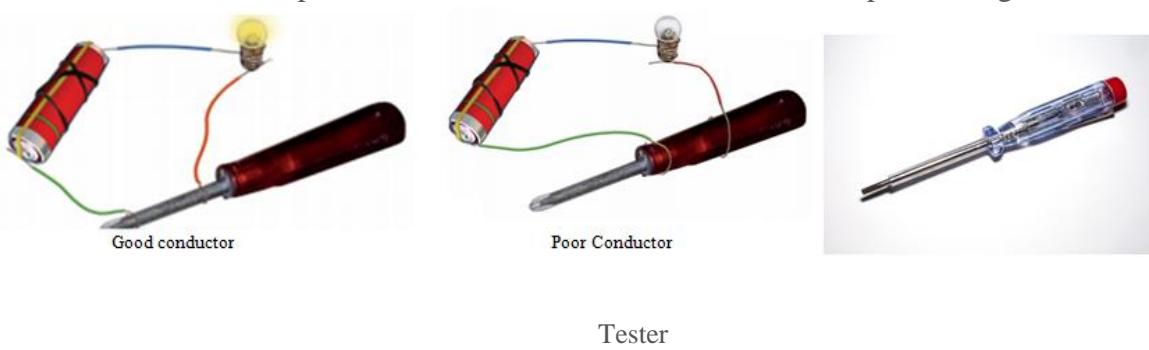
Example- metal like copper, aluminium, etc. and graphite (a form of carbon)

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:

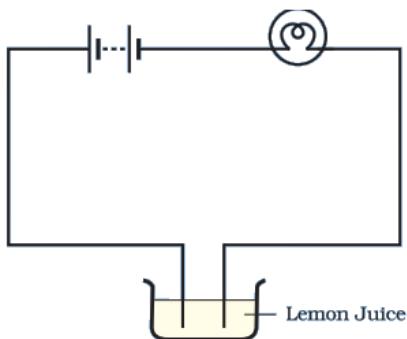
It is a device to test if a particular material allows electric current to pass through it or not.



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 pf 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.

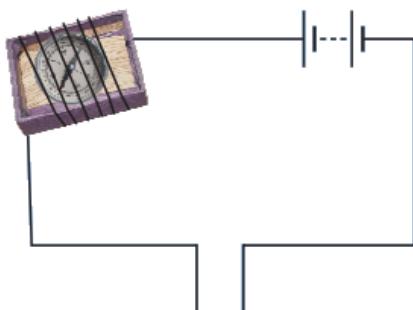
To test whether substance is conducting or not using magnetic effect:

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**.

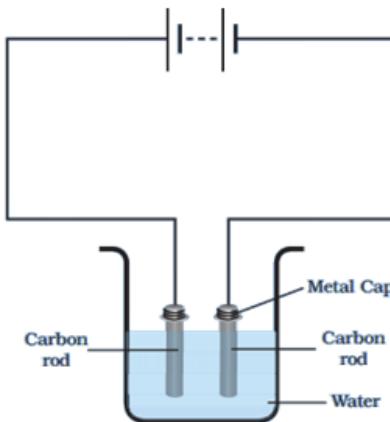
There can be various chemical effects observed on passing electric current depending on the type of solution and electrodes:

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



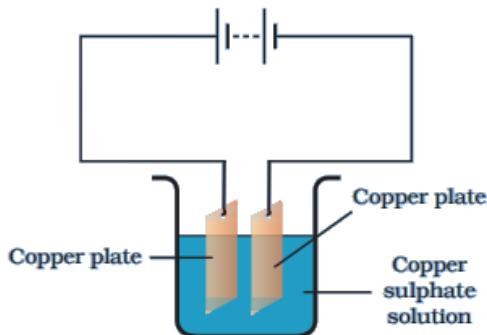
Passing current through water

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.

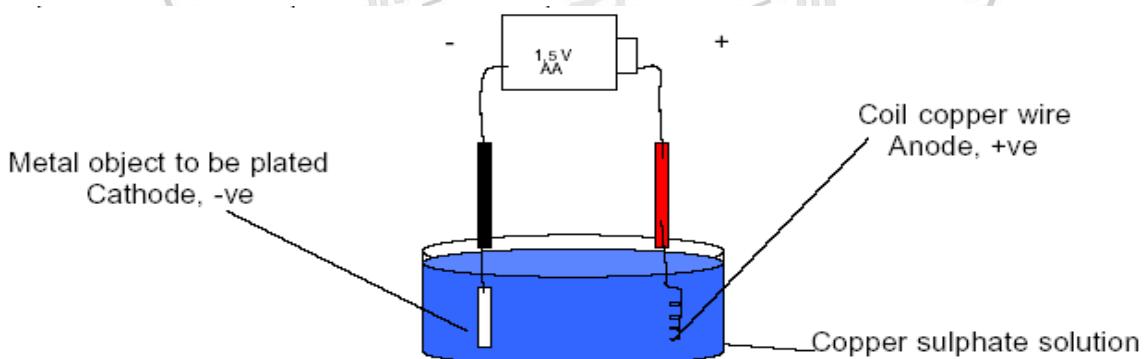
Fun with chemistry (Copper plating)

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 ve 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).



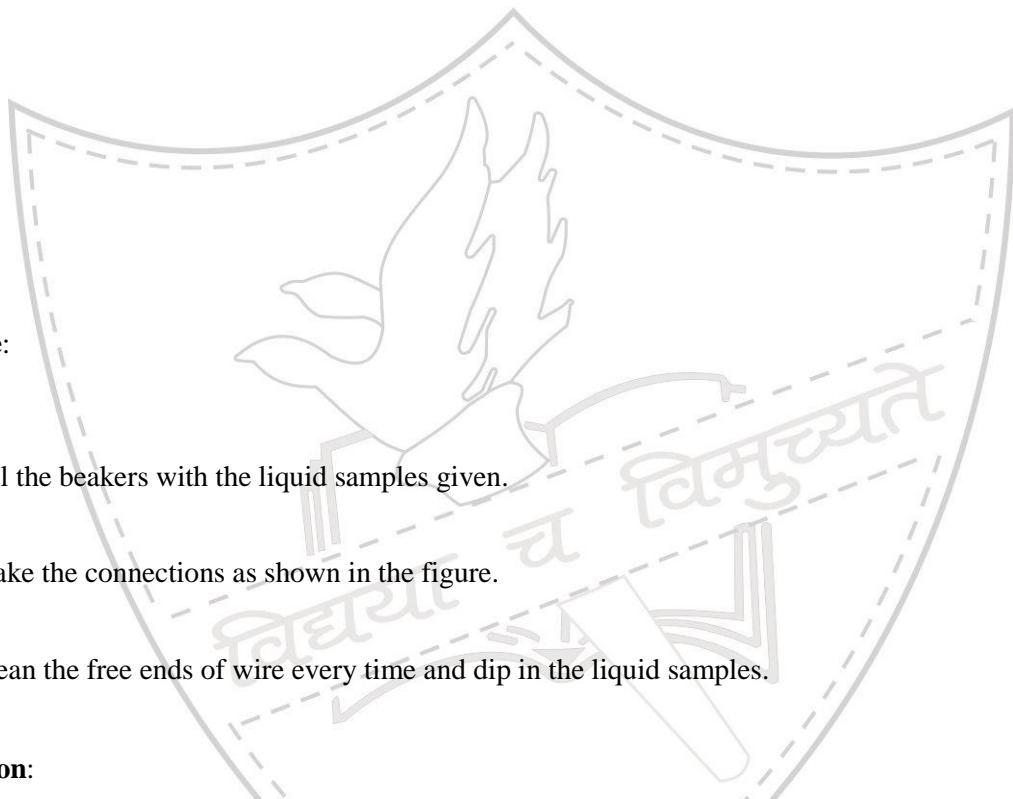
ACTIVITY 1 (to be done in the laboratory)

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.

SANSKRITI

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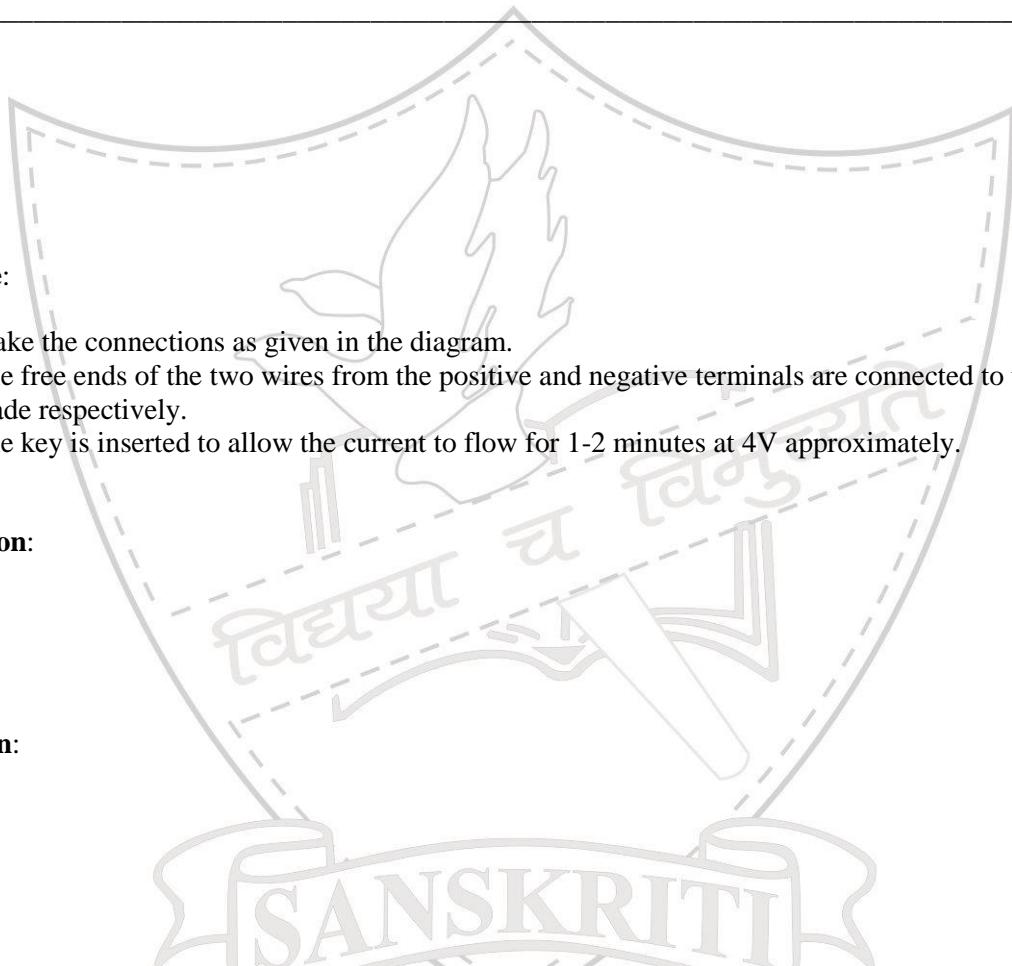
Chapter – 14**CHEMICAL EFFECTS OF ELECTRIC CURRENT****ACTIVITY 3**

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:

Chapter – 14**CHEMICAL EFFECTS OF ELECTRIC CURRENT****Assignment 14.1(to be done in the smart skill)**

1. Answer in one word.

- A device indicating flow of electric current in a circuit ._____
- A lighting device that glows even with a weak electric current ._____
- The type of electricity created due to rubbing of two bodies_____
- Positively charged ions which get attracted to the negative electrode._____
- Process of depositing a thin layer of metal on another with the help of electricity._____
- A solution that conducts electricity._____
- Metal rods/plates through which current enters or leaves an electrolyte._____

2. Fill in the blanks.

- _____ charges repel each other .
- Table salt mixed in water acts as _____ in electrolysis .
- In electrolysis , metal to be coated acts as an _____ .
- Impurities in water generally _____ its conductivity.
- The longer lead of LED is always connected to the _____ terminal of the battery .
- The flow of conventional current is in the _____ direction to the flow of electrons.
- Electrolysis occurs when electrolyte is in the _____ state.
- In electrolysis of water, hydrogen is formed at the _____ .
- An electric current brings about chemical changes in most conducting _____.
- In electrolysis of copper sulphate solution, copper is deposited at _____ electrode.

3. Tick the correct option(s):-

- Electricity is a
 - bad servant and a bad master
 - good servant and a good master
 - bad servant but a good master
 - good servant but a bad master

- (ii) If the gap in an electric circuit is filled with a liquid, the current in the circuit
- flows in some cases and not in others
 - never flows.
 - always flows
 - flows only in case of distilled water
- (iii) For electroplating an iron rod with copper, we use
- iron sulphate solution to deposit iron on copper
 - copper sulphate solution to deposit iron on copper
 - copper sulphate solution to deposit copper on iron
 - iron sulphate solution to deposit copper on iron
- (iv) A dry cell converts chemical energy into
- mechanical energy
 - heat energy
 - electrical energy
 - none of these
- (v) An object with excess of electrons
- negatively charged
 - positively charged
 - neutral
 - charged but sign of charge cannot be predicted
- (vi) Which of the following is not a conductor of electricity?
- brine water
 - tap water
 - distilled water
 - sea water

Chapter – 14**CHEMICAL EFFECTS OF ELECTRIC CURRENT****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. What are the practical applications of electroplating?
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.
11. The amount of metal deposited on the negative electrode during electroplating depends on two factors. What are they?
12. Name three forms of energy into which electric energy can be converted .
13. Differentiate between the following :
 - a) Conductors and Insulators
 - b) Static electricity and electric current

Chapter – 14**CHEMICAL EFFECTS OF ELECTRIC CURRENT****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

Activities-

1. To observe common metals and non metals.
2. To demonstrate the physical properties of metals and non-metals – Sonorosity, 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.g Aluminium, Sodium

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

Metalloids-Elements which show the properties of both metals and non-metals. For e.g Boron, 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 buildings, ironsheets, 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 Sulphuric acid. 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.

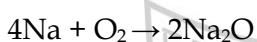
Nitrogen is used in making explosives (TNT and nitroglycerine)

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

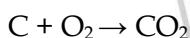


Metal oxides so formed are basic in nature. Some of the metal oxides react with water to form alkalis. Metal oxides, being basic, turn red litmus blue. Similarly, some other metals such as sodium and potassium react with oxygen even at room temperature to form basic oxide and catch fire.

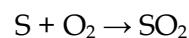


To prevent this reaction, sodium and potassium are stored under kerosene oil.

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.



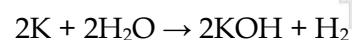
• Sulphur is also a non-metal. When sulphur is burned in air, it reacts with the oxygen (of air) to form an acidic oxide called sulphur dioxide. Sulphur dioxide is a pungent, suffocating gas.



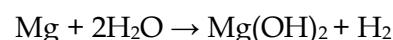
A solution of sulphur dioxide in water turns blue litmus to red, indicating that sulphur dioxide is acidic in nature. When sulphur dioxide is dissolved in water, it forms sulphurous acid.



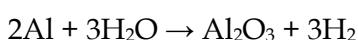
2. **Reaction of Metals with Water:** Metals react with water to form a metal hydroxide or metal oxide and hydrogen gas. Some metals react with cold water, some react with hot water and some react with steam depending upon their chemical reactivity. • Sodium, potassium and calcium react vigorously with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



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



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



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 not displace hydrogen from dilute acids, as they are less reactive than hydrogen.



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.

Reactivity Series of Metals		
	Potassium	K (Most reactive metal)
	Sodium	Na
	Calcium	Ca
	Magnesium	Mg
	Aluminium	Al
	Zinc	Zn
	Iron	Fe
	Tin	Sn
	Lead	Pb
	[Hydrogen]	[H]
These metals are more reactive than hydrogen	Copper	Cu
	Mercury	Hg
These metals are less reactive than hydrogen	Silver	Ag
	Gold	Au (Least reactive metal)

Well here is an acronym used to learn reactivity series

Police - potassium

Sergeant - sodium

Charlie - calcium

M - magnesium

A - aluminium

C - carbon

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 '**Police Sergeant Charlie M A C Z I N T L
Caught Me Stealing Gold Plates'**.

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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-

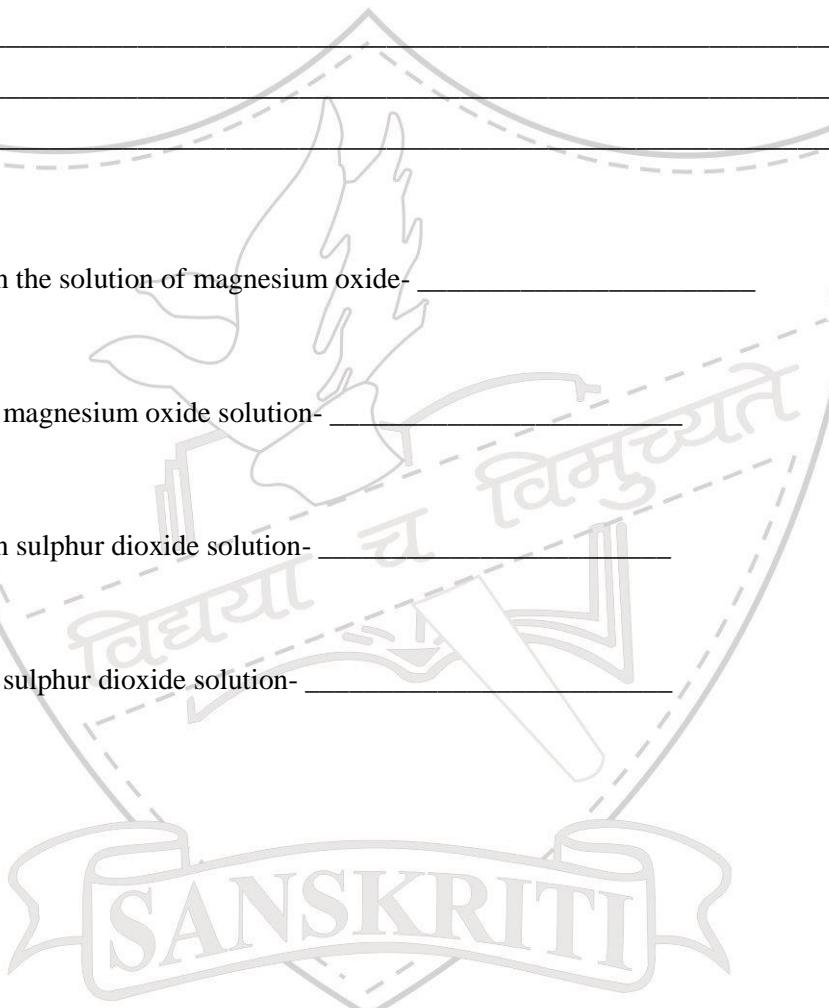
Colour of blue litmus in the solution of magnesium oxide- _____

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)

Q1.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 an non 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. _____ and _____ occur both in free state and combined state .
- n. The non metal used in jewelry _____ .
- o. Melting point of most metals is _____ than non metals .
- p. The property which allows metals to be hammered into their sheets is _____ .
- q. The property which allows metals to be drawn into wires is _____ .

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Q2. 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 .

Q3. 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 |

iii. Which one of the following is a good conductor of electricity?

- | | |
|---------|------------|
| a. Iron | b. Plastic |
| c. Wood | d. Glass |

Q.4 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	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	t	i	i	e	a	t	h	r	t	m	i
a	i	i	r	f	t	s	e	e	m	a	b	s	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 _____

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 dil HCl, 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. Tungsten 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

SYNTHETIC FIBRES AND PLASTICS

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 fibres.
4. To study the effect of flame on different types of fibres.
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 fibres
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 FIBRES AND PLASTICS NOTES

Fibres are classified into two types-

- a. Natural fibres- these are obtained from nature. Ex- jute, cotton, silk, wool etc.
- b. Synthetic fibres- They are obtained by chemical reactions in factories. Ex- nylon, polyester, rayon, terycot etc.

Advantages of synthetic fibres over natural fibres-

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 fibres-

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 fibres-

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 fibres-



Rayon

- Rayon is formulated from natural resources like wood pulp, but still it is regarded as synthetic or man-made fibre having characteristics similar to silk. It is also called regenerated fibre.
- 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 fibre. The term is obtained from New Yory and London.
- In 1931 this fibre was formulated from coal, water and air for the first time.
- It is an elastic, light weighted and strong fibre 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 fibre finds use in a variety of purposes for instance, in making ropes, seatbelts, toothbrushes, sleeping bags, tents etc.

Polyester

- This fibre 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 fibre 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 bedsheets, sarees, mouse-pads, ropes, fabrics for conveyor belt, insulating material as well as cushioning material in pillow.

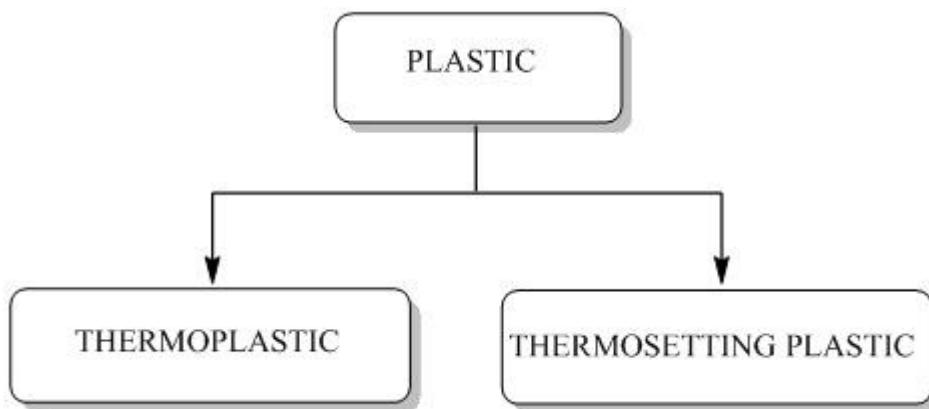
Polyester can further be classified into Terylene and PET.

Acrylic

- This synthetic fibre 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 fibre 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

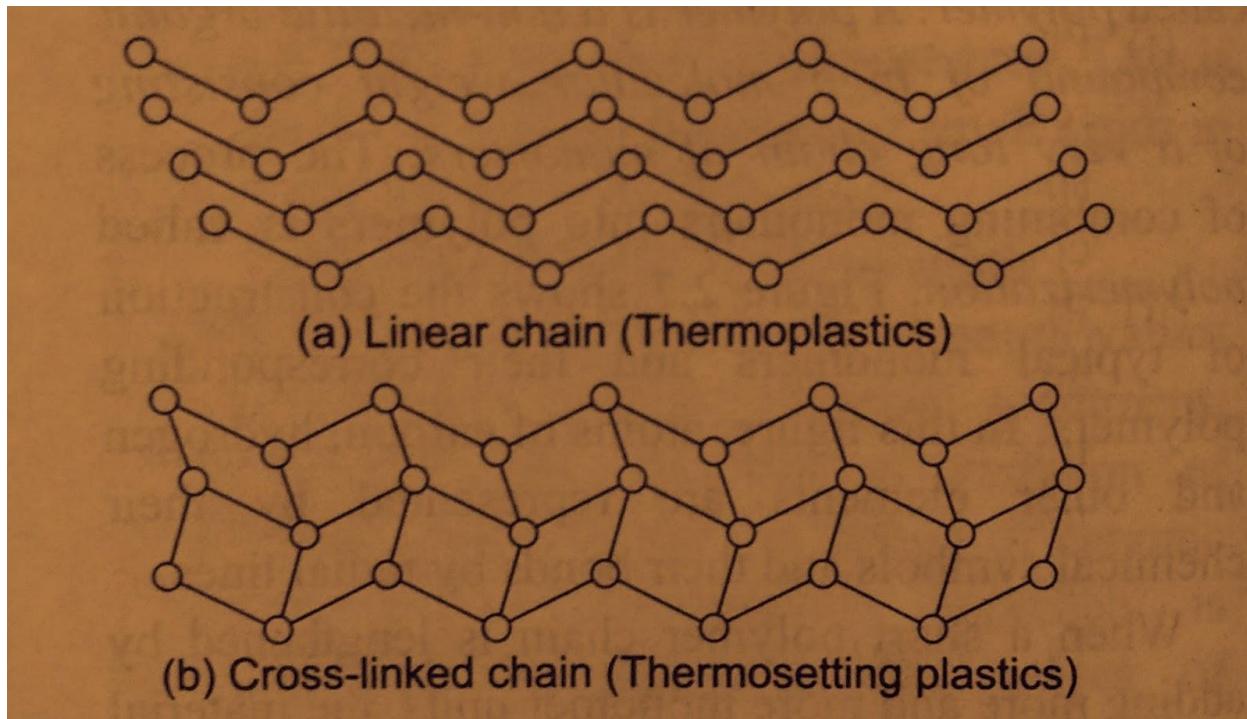


THERMOPLASTICS:

- This category of fibre gets easily deformed on exposure to heat and can also be easily bent.
- They are melt processable, 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.
- Phenolic resins, amino resins, polyester resins, silicon resins, epoxy resins, Bakelite, melamine and polyurethanes are some of 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 moulded 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-

They are non biodegradable.

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.

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

Q1. 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

Q2. 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 make terycot .
- (e) _____ syntheticfiber 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.

Q3. 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.

Q4. Explain why plastic containers are favoured for storing food.

Q5. Define petrochemicals.

Q6. Do polymers occur in nature also? Give examples

Q7. Write three advantages of rayon.

Q8. Why do uniforms of firemen have coating of melamine plastic?

Q9. What is the reason that acrylic is favoured over wool for making sweaters and blankets in winters .

Q10. The waste created by plastic is not environment friendly .Comment.

Q11. Why electric plugs and saucepan handles are made up of thermosetting polymers .

HOTS:

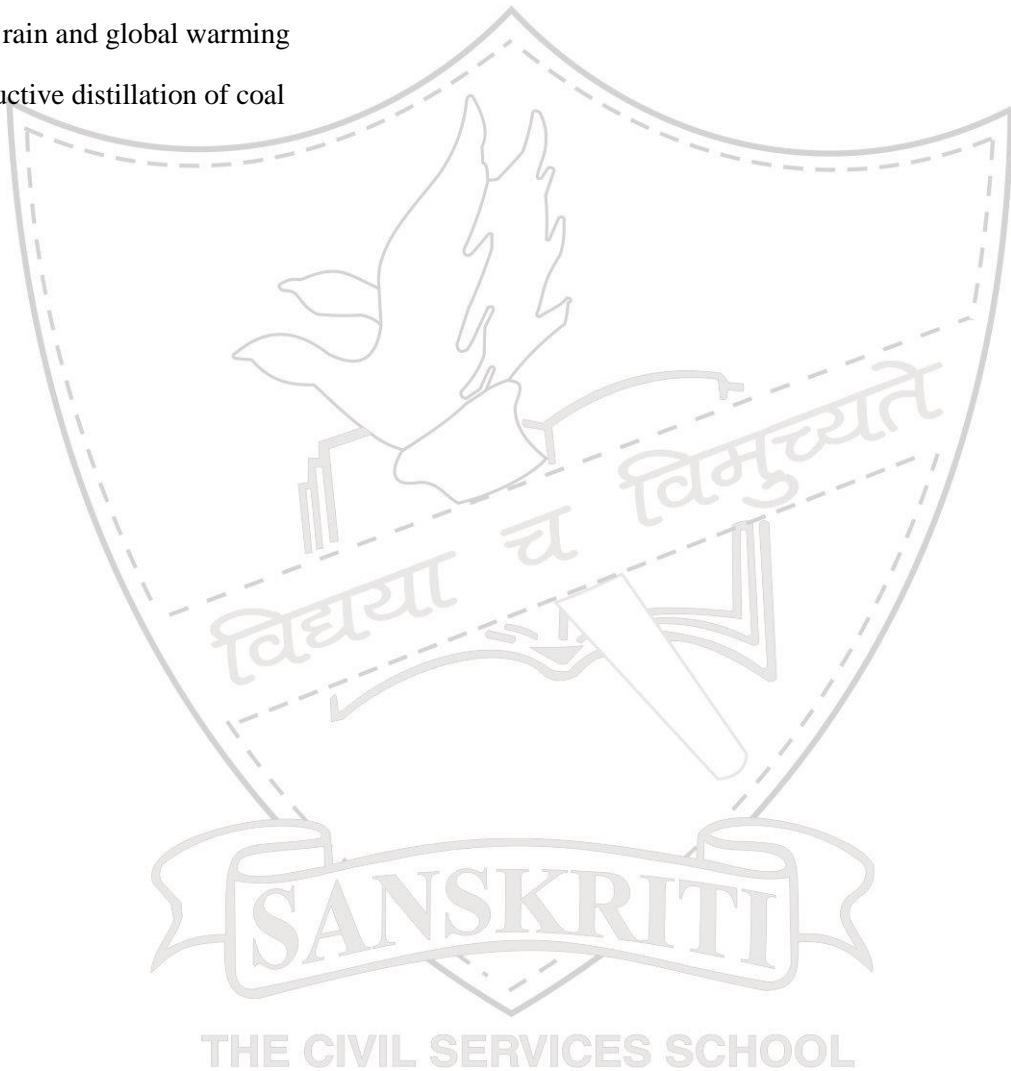
Q.1 Nalini wants to learn swimming. She goes to a store to buy swimming costume and a cap. What kind of material should these be made of and why?

Q.2 We 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 fibres invented? Use the Internet and find out about discovery/invention of natural and synthetic fibres.

Coal and petroleum

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



Chapter - 5

COAL AND PETROLEUM

Assignment 5.1 to be done in the smart skill)

Q1. Fill in the blanks:

- _____ , _____ and _____ are grouped under non-renewable sources of energy.
- The decayed plants slowly turned into coal through a process of _____.
- The fossil fuels have a high content of carbon and _____.
- The _____ of coal produces coke, coal gas, coal tar and ammoniacal liquor .

Q2. Write the full forms of the following abbreviations:

- CNGb. LPGc. PCRA

Q3. Mark the following statements as True or False.

- Exhaustible natural resources are present in unlimited quantity in nature and are not likely to be exhausted by human activities.
- Sunlight and air are examples of inexhaustible natural resources.
- The amount of inexhaustible natural resources in nature is limited. They can be exhausted by human activities.

Q5. Name the following:

A petroleum product used

- as a fuel for stoves and lamps
- for lubricating machine parts
- for making Vaseline and candles

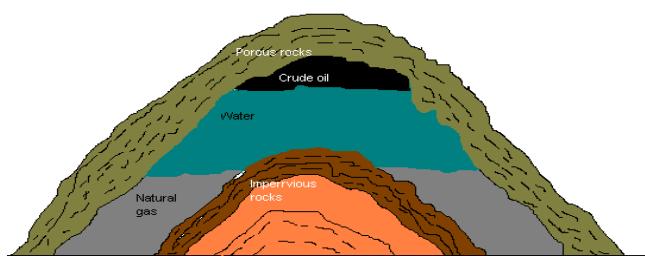
B. a coal product used

- in the extraction of metals
- 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

c. Fossil fuels

Q3. Differentiate between

a. simple distillation, destructive distillation and fractional distillation

b. 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 ?

Q6. What is destructive distillation of coal? Give the names and the uses of all the products formed.

Q7. 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 ? What is the difference between destructive distillation and fractional distillation ?

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

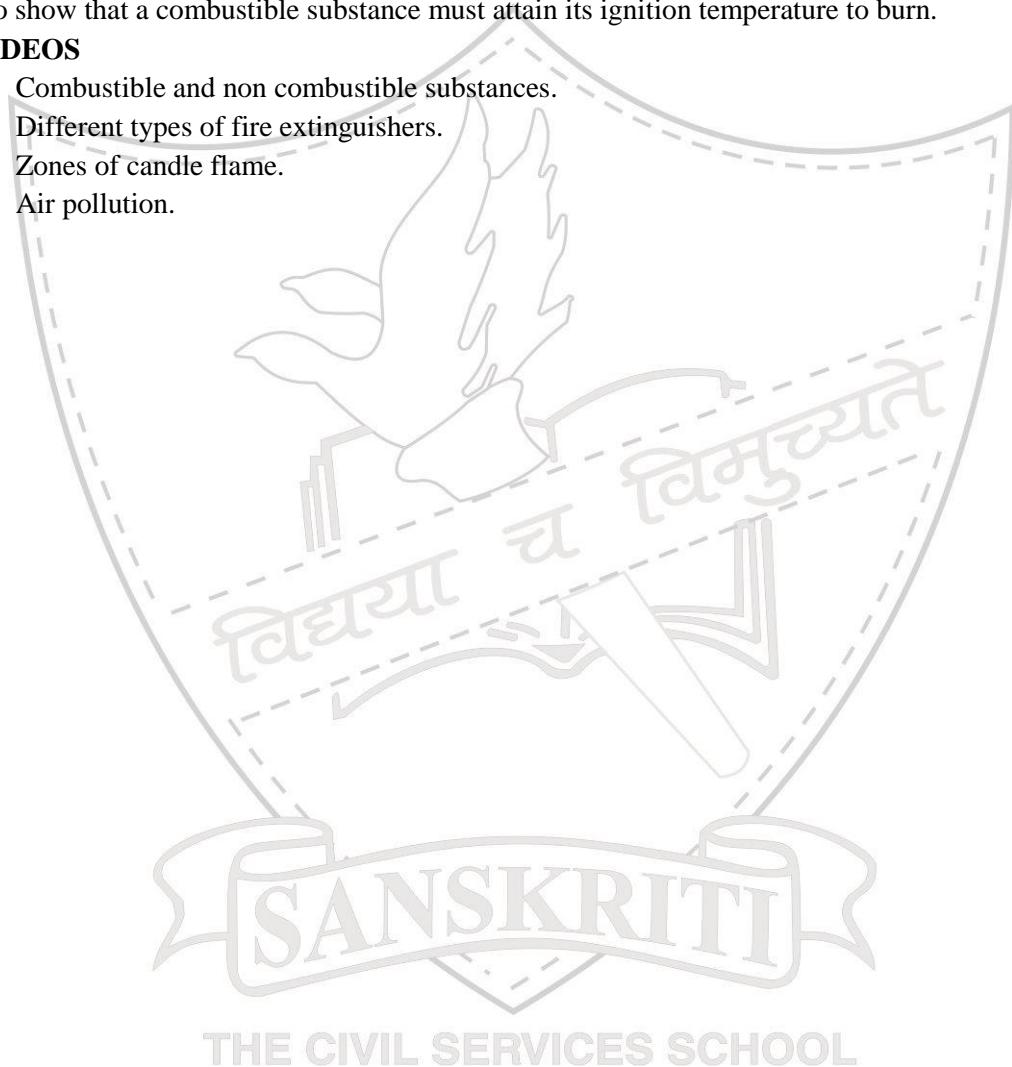
COMBUSTION AND FLAME

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.



Chapter 6**COMBUSTION AND FLAME****Activity 6.1**

Aim- To show the presence of unburnt carbon particles in the luminous zone of a flame. (candling)

Materials required-

Theory-

Procedure-

Diagram-

Observation-

Result-

Precaution-



Chapter - 6**COMBUSTION AND FLAME****Assignment 6.1 (to be done in the smart skill)**

Q3. Classify the following as combustible and non-combustible substances:

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

Q4. 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

Q3. Categorise the following fuels on the basis of their physical state:

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

Q4. 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.

Q5. 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

Chapter - 6**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 what are the disadvantages of using wood as fuel.

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.



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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 fibre commonly blended with cotton to make terycot .
2. _____ synthetic fibre is also called artificial silk.
3. _____ is the first completely synthetic material used to make stockings.
4. _____ is polymers that can be moulded 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 favoured 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

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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

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. 3

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
- a. Oxygen
 - b. Hydrogen
 - c. Chlorine
 - d. Carbon dioxide

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

- a. Polymer
- b. Displacement
- c. Malleability
- d. Photosynthesis

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

- a. Nylon
- b. Plastic
- c. Cellulose
- d. Polyester

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 reaction

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 nylon $1 \times 6 = 6$

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 fibres $2 \times 3 = 6$

Academic Session: 2019 - 20
First Term Examination
Subject - Science
M/5/2

Time: 3 Hr.**MM - 80****General Instructions-**

- This paper has --5-- printed sides.
- Attempt each section on a different answer sheet
- Read the questions carefully. Marks will be deducted for not following instructions given in the questions.
- Attempt the questions in the correct sequence.
- Write question numbers as given in the paper.

Section A	Physics	M.M= 27
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Q1.	a) Choose the most appropriate answer. (Please write the option number and the answer both)	1x5=5
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1. The image formed by a plane mirror is
 - 1) Virtual, 2) Erect, 3) Same size as the object is, 4) upside down
 - a) 1) Only
 - b) Both 1) and 2)
 - c) 1), 2) and 3) are correct
 - d) 2), 3) and 4) are correct
2. Sound cannot pass through
 - a) Air
 - b) Vacuum
 - c) Water
 - d) Iron rod

b) Answer in one complete meaningful sentence-

Name the part of our ear that vibrates when we hear and give the audible frequency range for human beings.

c) Fill in the blanks:

1. The speed of sound in air is _____ as compared to solid.
2. Out of Men, women and a baby the voice of _____ will have maximum frequency.

Q2.	Copy and complete the table	2
-----	------------------------------------	---

PART OF THE HUMAN EYE	DESCRIPTION
	Carries signal to the brain
	Acts as a screen where image is formed
	Gives colour to the eye
	Focuses the image

M/5 Page 1 of Set 2

Q3.	What is Frequency of a vibrating object? An object is vibrating at 50 times in 2 second. Find its frequency?	2
Q4.	a) How many times a ray of light is reflected by two plane mirrors placed parallel and facing each other? b) The distance between the object and the image formed by a plane mirror appears to be 20cm. Find the distance between mirror and the object.	2
Q5.	Give scientific reasons for the following-	3
	a) If an explosion happens on moon it's sound is not audible to the human ear. b) Though lightning and thunder occur at the same time, the sound of thunder is heard much later. c) People often kneel down and place their ear close to the railway track to hear the sound of an approaching train.	
Q6.	a) List two sources of noise pollution in your house. b) How do human beings produce sound? Explain.	1+2=3
Q7.	a) What is dispersion? Explain with the help of a neat-labeled diagram. b) The ray of light strikes a mirror surface at an angle of 40^0 , Find i) The angle of reflection ii) Angle between incident ray and reflected ray	3+2=5
Q8.	a) With the help of an activity, using a ringing mobile, show that sound needs a medium to travel ? b) List two musical instruments each, which produce sound by vibrating strings and a vibrating air column.	3+2

Section B	Chemistry	M.M= 27
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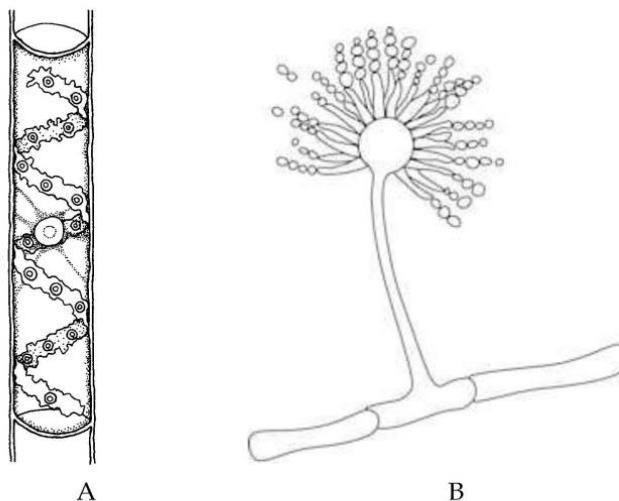
Q1.	Adding common salt to distilled water makes it a. Good conductor b. Insulator c. None d. Both	1
Q2.	Which of the following is an example of non-metal with lustre? a. Coal b. Chlorine c. Phosphorus d. Graphite	1

- Q3. Which of the following non-metals reacts and catches fire on exposure to air? 1
 a. Nitrogen
 b. Phosphorus
 c. Sulphur
 d. Carbon
- Q4. Balance the following chemical equation - 1
 $\text{Al} + \text{Cl}_2 \rightarrow \text{AlCl}_3$
- Q5. What is the chemical name of Na_2SO_4 . 1
- Q6. Write down the chemical formula for Calcium nitrate. 1
- Q7. Why iron cans used for storing food items are electroplated with tin? 1
- Q8. Why aluminium foils are used to wrap food items? 2
- Q9. What happens when (explain with the help of balanced chemical equation) 2
 a. Iron is added to copper sulphate solution
 b. Magnesium is added to hydrochloric acid?
- Q10. Why do copper vessels develop a greenish layer when exposed to moist air? 2
- Q11. How are conductors and electrolytes different from each other? Explain giving a suitable example. 2
- Q12. Why metal oxides are basic in nature whereas non-metal oxides are acidic in nature? Explain with one example each? How can you check their nature with litmus paper? 3
- Q13. a) Explain the process of electroplating. Draw a neat and labelled diagram to explain the same.
 b) Why chromium plating is done on bathroom accessories and kitchen appliances . 3
- Q14. What is the full form of LED? When is it used in the circuit and describe the purpose of one long and another shorter lead of a LED? 3
- Q15. Name a non-metal used for following 3
 a. Cutting of glass
 b. Making weather balloons
 c. As a purple colour antiseptic on wounds and cuts.

Section C	Biology	M.M= 26
Q1.	Microorganism that helps in the formation of alcohol: <i>a. Lactobacillus</i> <i>b. Rhizobium</i> <i>c. Rhizopus</i> <i>d. Yeast</i>	1

- Q2. Which among the following is the vector? 1
- Ant
 - Housefly
 - Mosquito
 - Spider
- Q3. Which part of the cell contains organelles? 1
- Nucleus
 - Cytoplasm
 - Vacuole
 - Between cell membrane and cell wall.
- Q4. The percent of nitrogen gas in the atmosphere remains constant. Justify. 1
- Q5. State true or false 1
Multicellular organisms have more than one cell.
- Q6. Give the location and state one function of the chromosomes in the cell. 1
- Q7. a. Rohan's mother purchased airtight glass containers to store dry fruits. Give one reason why did she prefer such storage? 3
b. Choose the correct answer
The bread dough rises because of: kneading / Yeast cells
c. _____ is the disease caused due to virus in animals.
- Q8. a. Slide preparation of a tissue showed cells with cell membrane, vacuole and cell wall. Draw a neat diagram of the cell and label the following parts: Cytoplasm, Vacuole and Nucleus 3
b. State whether the cell is that of plant/ animal.
- Q9. Rahul had very high fever; his mother took him to the doctor, where he was examined and then advised to go for blood test. The blood reports confirmed that he had malaria.
Answer the following 3
- Name the group in which malaria causing pathogen is classified.
 - How is the above disease transmitted?
 - State two preventive measures, which should be taken to prevent the spread of malaria.
- Q10. Give one point of difference between the following: 3
- Amoeba and WBC
 - Prokaryotic and Eukaryotic cell.
 - Tissues and Organ
- Q11. a. Cell is the basic structural unit of life. Justify. 3
b. Name the scientist who coined the term cell.
c. The coloured structures present in the cytoplasm of a plant cell are called _____.

Q12. Observe the figures given below and answer the following questions: 5(2+3)



1. Give the name and group of the organisms A and B.
2. a. Give two points to justify that antibiotics should be taken only on the advice of a qualified doctor.
b. When are antibodies produced in our body?
c. What is disease causing microorganism called?

**Academic Session: 2019 - 20
First Term Examination
Subject - Science
M/5/1**

Time: 3 Hr.**MM - 80****General Instructions-**

- This paper has --5-- printed sides.
- Attempt each section on a different answer sheet
- Read the questions carefully. Marks will be deducted for not following instructions given in the questions.
- Attempt the questions in the correct sequence.
- Write question numbers as given in the paper.

Section A Physics M.M= 27

Q1. a) Choose the most appropriate answer. (Please write the option number and the answer both) 1x5=5

1. The image formed by a plane mirror is
 - 1) Virtual, 2) Erect, 3) Same size as the object is, 4) upside down
 - a) 1) Only
 - b) Both 1) and 2)
 - c) 1), 2) and 3) are correct
 - d) 2), 3) and 4) are correct

2. Sound cannot pass through
 - a) Air
 - b) Vacuum
 - c) Water
 - d) Iron rod

b) Answer in one complete meaningful sentence-

Name the part of our ear that vibrates when we hear and give the audible frequency range for human beings.

c) Fill in the blanks:

i) The speed of sound in solid is _____ as compared to air.

ii) Out of Men, women and a baby the voice of _____ will have minimum frequency.

Q2. What is Time period of a vibrating object? An object is vibrating at 50 Hz; find it's time period? 2

Q3.

- a) How many times a ray of light is reflected by two plane mirrors placed parallel and facing each other?
- b) The distance between the object and the image formed by a plane mirror appears to be 24cm. Find the distance between mirror and the object.

2

- Q4. Copy and complete the table 2
- | PART OF THE HUMAN EYE | DESCRIPTION |
|-----------------------|--|
| | Carries signal to the brain |
| | Acts as a screen where image is formed |
| | Gives colour to the eye |
| | Focuses the image |
- Q5. Give scientific reasons for the following- 3
- If an explosion happens on moon it's sound is not audible to the human ear.
 - Though lightning and thunder occur at the same time, the sound of thunder is heard much later.
 - People often kneel down and place their ear close to the railway track to hear the sound of an approaching train.
- Q6. a) How do human beings produce sound? Explain. 2+1=3
b) List two sources of noise pollution in your house.
- Q7. a) What is dispersion? Explain with the help of a neat-labeled diagram. 3+2=5
b) The ray of light strikes a mirror surface at an angle of 30° , Find
 - The angle of reflection
 - Angle between incident ray and reflected ray
- Q8. a) With the help of an activity, using a ringing mobile, show that sound needs a medium to travel. 3+2=5
b) List two musical instruments each, which produce sound by vibrating strings and a vibrating membrane

Section B **Chemistry** **M.M= 27**

- Q1. If you pass current through copper sulphate solution, copper gets deposited on the plate connected to _____ terminal of the battery. 1
 - Positive
 - Negative
 - Both
 - None of these
- Q2. Which one of the following metals does not react with dilute hydrochloric acid? 1
 - Magnesium
 - Aluminium
 - Iron
 - Copper

Q3.	What is the name of the substance that will be flattened on beating with a hammer?	1
	a. Crystal of iodine b. Lump of sulphur c. Piece of coal d. Zinc granule	
Q4.	Balance the following chemical equation - $\text{Ca} + \text{H}_2\text{O} \rightarrow \text{Ca}(\text{OH})_2 + \text{H}_2$	1
Q5.	Write down the chemical formula for Magnesium carbonate.	1
Q6.	What is the chemical name of $(\text{NH}_4)_2\text{SO}_4$.	1
Q7.	Why is chrome plating very popular in the industry?	1
Q8.	Why cooking utensils are made of metals but their handles are made of Wood / plastic?	2
Q9.	What happens when (explain with balanced chemical equation) a. Iron nail is added to copper sulphate solution b. Magnesium is added to hydrochloric acid?	2
Q10.	Silver is more likely to tarnish near an industry than in a place far away? Explain why?	2
Q11.	How are conductors and electrolytes different from each other? Explain giving a suitable example.	2
Q12.	a) Explain the process of electroplating. Draw a neat and labelled diagram to explain the same. b) Which metal is electroplated on iron for making 'cans' used for storing food?	3
Q13.	Why metal oxides are basic in nature whereas non-metal oxides are acidic in nature? Explain with one example each? How can you check their nature with litmus paper?	3
Q14.	What is the full form of LED? When is it used in the circuit and describe the purpose of one long and another shorter lead of a LED?	3
Q15	Name a non-metal used for following - a. Disinfecting drinking water b. Making electrodes c. As a purple colour liquid as antiseptic.	3

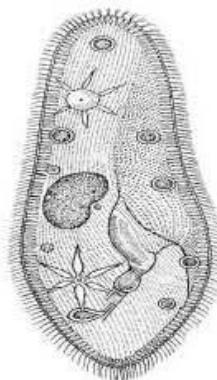
	Section C	Biology	M.M= 26
Q1.	Microorganism that helps in the formation of alcohol:		1
	a. <i>Lactobacillus</i> b. <i>Rhizobium</i> c. <i>Rhizopus</i> d. <i>Yeast</i>		
Q2.	Which part of the cell contains organelles?		1
	a. Nucleus b. Cytoplasm c. Vacuole d. Between cell membrane and cell wall.		
Q3.	Which among the following is the vector?		1
	a. Ant b. Housefly c. Mosquito d. Spider		
Q4.	Give the location and state one function of the chromosomes in the cell.		1
Q5.	State true or false Unicellular organisms have more than one cell.		1
Q6.	The percent of nitrogen gas in the atmosphere remains constant. Justify		1
Q7.	a. Rohan's mother purchased airtight glass containers to store dry fruits. Give one reason why did she prefer such storage? b. Choose the correct answer Which of the following is an antibiotic: Streptomycin / Sodium bicarbonate c. _____ is the disease caused due to bacteria in animals.		3
Q8.	a. Slide preparation of a tissue showed cells with cell membrane, vacuole and no cell wall. Draw a neat diagram of the cell and label the following parts: Cytoplasm, Vacuole and Nucleus b. State whether the cell is that of plant/ animal		3(1+.5*4)
Q9.	Give one point of difference between the following: a. Amoeba and WBC. b. Eukaryotic and Prokaryotic cell. c. Tissue and Organ.		3
Q10.	a. Cell is the basic structural unit of life. Justify. b. Name the scientist who coined the term cell. c. The coloured structures present in the cytoplasm of a plant cell are called _____.		3

- Q11. Rahul had very high fever; his mother took him to the doctor, where he was examined and then advised to go for blood test. The blood reports confirmed that he had malaria. 3

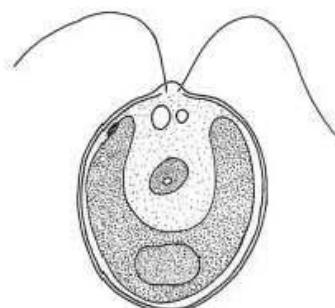
Answer the following

- Name the group in which malaria causing pathogen is classified.
- How is the above disease transmitted?
- State two preventive measures, which should be taken to prevent the spread of malaria.

- Q12. Observe the figures given below and answer the following questions: 5(2+3)



A



B

- Give the name and group of the organisms A and B.
- a. Give two points to justify that antibiotics should be taken only on the advice of a qualified doctor.
b. When are antibodies produced in our body?
c. What is disease causing microorganism called?

Academic Session : 2019- 20

Unit Test II

Subject - Science

Class -VIII

SET-1

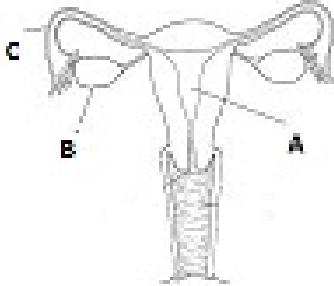
Time : 1 hr 30 mins.**MM 40**

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 – 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.	4
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 – 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.	1.5x2=3
	Section B Chemistry	MM-13
Q1	Which of the following is a source of rayon? (a) Wool (b) PET (c) Wood pulp (d) Silk	1

Q2	Which of the following is not a common property of plastics? (a) Non-reactive (b) Light in weight (c) Durable (d) Good conductor of electricity	1
Q3	Which of the following groups contain all synthetic substances? (a) Nylon, Terylene, Wool (b) Cotton, Polycot, Rayon (c) PVC, Polythene, Bakelite (d) Acrylic, Silk, Wool	1
Q4	Fill in the blanks a) A plastic used for making uniform for firemen is _____. b) A synthetic fiber similar to wool is _____. <i>1 Y 4</i>	1
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 C Biology	MM-14
Q 1.	Choose the correct option and write the complete statement in your answer sheet 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	1
Q2	Complete the following sentences a. Like plants, the reproductive parts in animals also produce _____ which fuse to form a _____	1+1

	b. In humans _____ matured egg is released into the _____. Q3	
	 a) Identify the diagram given above. b) Label Part A and C c) What function does Part B perform ?	3
Q4.	a. Define Reproduction b. Differentiate between sperm and ovum. Give two point of difference.	1+2
Q5.	a. Which asexual mode of reproduction is shown by Amoeba? 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	1+3+1



Academic Session : 2019- 20

Unit Test II

Subject - Science

Class -VIII

SET -2

Time : 1 hr 30 mins.

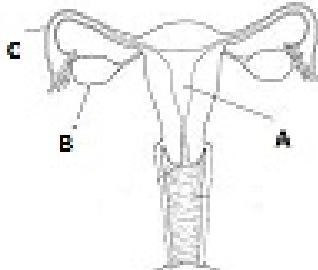
MM 40

General Instructions

- 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	<p>Name the following –</p> <p>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.</p>		4
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.	<p>a. Draw a neat labelled figure to show the constellation that helps you to locate the Pole star. b. Artificial satellites are extremely useful to mankind. Mention three important uses of artificial satellites.</p>		1.5x2=3
	Section B	Chemistry	MM-13
Q1	<p>Pick the synthetic fiber out of the following?</p> <p>(a) Cotton (b) Nylon (c) Jute (d) Wool</p>		1

Q2	Which of the following is not a common property of plastics? (a) Non-reactive (b) Light in weight (c) Durable (d) Good conductor of electricity	1
Q3	Which of the following groups contain all natural fibers? (a) Nylon, Terylene, Wool (b) Cotton, Polycot, Rayon (c) cotton, wool , silk (d) Acrylic, Silk, Wool	1
Q4	Fill in the blanks (a) The first fully synthetic fiber was _____. plastic used for making crockery is _____. <i>ANSWER</i>	1
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 C Biology		MM-14
Q 1.	Choose the correct option and write the complete sentence in your answer sheet 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	1
Q2	Complete the following sentences a. In humans _____ matured egg is released into _____. b. Like plants, the reproductive parts in animals also produce _____ which fuse to form a _____.	2

Q3	 <p>a) Identify the diagram given above. b) Label Part A and B c) What function does Part A perform?</p>	3
Q4.	<p>a. Define Reproduction b. Differentiate between sexual and asexual mode of reproduction. Give two point of difference.</p>	3
Q5.	<p>a. Which asexual mode of reproduction is shown by <i>Hydra</i>? 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?</p>	1+3+1