

AP TENTH CLASS – 2026
GUESS QUESTION PAPER
GENERAL SCIENCE PAPER – 1 (PHYSICAL SCIENCE)

Section - I (1-Mark Questions)

Question 1:

- Q. Why do we apply paint on iron articles?**
 A. To preventing rusting.
- Q. Translate into chemical equation and balance: Hydrogen gas combines with nitrogen to form ammonia.**
 A. $3\text{H}_2 + \text{N}_2 \rightarrow 2\text{NH}_3$
- Q. Create a balanced chemical equation to show a displacement reaction involving zinc and another compound.**
 A. $\text{Zn} + \text{CuSO}_4 \rightarrow \text{ZnSO}_4 + \text{Cu}$
- Q. A magnesium ribbon is burnt in the presence of Oxygen to give Magnesium oxide. Rewrite as a Chemical equation.**
 A. $2\text{Mg} + \text{O}_2 \rightarrow 2\text{MgO}$
- Q. Design a balanced chemical equation with two reactants and one product.**
 A. $\text{C} + \text{O}_2 \rightarrow \text{CO}_2$
- Q. Guess, why should a magnesium ribbon is cleaned before burning in air?**
 A: It is cleaned to remove magnesium oxide that prevents burning.
- Q. Predict, Exhalation air is hotter than Inhalation air in respiration process.**
 A. Heat released. So it is an exothermic reaction.
- Q. Why do we keep food in air tight containers?**
 A. To prevent rancid.
- Q. Oil and fat containing food items are flushed with nitrogen. Why?**
 A. To prevent rancid.

Question 2:

- Q. Name a non-metal which is lustrous.**
 A. Iodine.
- Q. Why are toothpastes generally basic?**
 A. Toothpaste neutralises the excess acid and prevents tooth decay.
- Q. Give example for salt.**
 A. Sodium chloride (NaCl).
- Q. Give an example for an acid.**
 A. Hydrochloric acid (HCl).
- Q. Food Cans are coated with tin and not with Zinc because...**
 A. Zinc is more reactive than tin.
- Q. Give an example for a "Base".**
 A. Sodium hydroxide (NaOH)
- Q. What is the common name of the compound CaOCl_2 ?**
 A. Bleaching powder.
- Q. Which of the following pairs will give displacement reactions?**
 (a) NaCl solution and copper metal (b) MgCl_2 solution and aluminium metal
 (c) FeSO_4 solution and silver metal (d) AgNO_3 solution and copper metal.
 A. (d) AgNO_3 solution and copper metal.
- Q. What is the common name for calcium oxide (CaO)?**
 A. Quicklime.
- Q. What type of reaction occurs in the digestion of food in our body?**
 A. Decomposition reaction
- Q. Write two conditions for corrosion.**
 A. Oxygen (air) and moisture (water).

Question 3:

- Q. General formula of alkanes is C_nH_{2n+2} . Write the first member of alkanes.**
 A. Methane (CH_4).
- Q. Which gas evolves when metal carbonate or metal hydrogen carbonate reacts with acids?**
 A. CO_2 (Carbon dioxide).
- Q. What happens to the pink color of phenolphthalein in a basic solution?**
 A. Pink colour.
- Q. The pH value of a solution is 10 or 13. What is its colour in the presence of methyl orange indicator?**
 A. Yellow colour.
- Q. Why oxides of high reactive metals cannot be reduced by Carbon?**
 A. Carbon can not displace the oxygen from oxides of high reactive metals.
- Q. What happens when carbon dioxide is passed through lime water?**
 A. Lime water turns milky due to the formation calcium carbonate ($CaCO_3$).
- Q. What type of reaction is used in the hydrogenation of vegetable oils?**
 A. Addition reaction.
- Q. What happens to the pink colour of phenolphthalein in a basic solution?**
 A. It remains pink.
- Q. What is a series of compounds with the same functional group called?**
 A. A homologous series.

Question 4:

- Q. Find the focal length of a lens of power -2.0 D?**
 A. The focal length = $\frac{1}{P} = \frac{1}{-2} = -0.5$ m
- Q. Propose any one method which can improve the properties of metals?**
 A. Alloying.
- Q. In the electrolytic refining of a metal, what would you take as the anode, the cathode, and the electrolyte?**
 A. Anode = impure metal, Cathode = pure metal, Electrolyte = metal salt solution.
- Q. Propose a method to extract a highly reactive metal from its ore?**
 A. Electrolysis method.
- Q. Which is used for free of germs in drinking water?**
 A. Bleaching powder ($CaOCl_2$)

Question 5:

- Q. The human eye can focus on objects at different distances by adjusting the focal length of the eye lens. This is due to**
 A) Presbyopia B) accommodation C) near-sightedness D) far sightedness.
 A. B) accommodation.
- Q. Identify the alkene among the following hydrocarbons. C_2H_6 , C_3H_8 , C_3H_6 , and CH_4 .**
 A. C_3H_6 .
- Q. Collect the saturated hydrocarbons in the following:**
 C_2H_6 , C_3H_8 , C_3H_6 , C_2H_2 , C_4H_6 , CH_4 .
 A. C_2H_6 , C_3H_8 , and CH_4
- Q. Which of the following hydrocarbon undergoes addition reaction?**
 A) C_2H_6 B) C_3H_8 C) CH_4 D) C_3H_6 .
 A. D) C_3H_6
- Q. Which of the following hydrocarbon undergoes substitution reaction?**
 A) C_2H_6 B) C_3H_8 C) CH_4 D) C_3H_6 .
 A. C) CH_4
- Q. Name the type of mirror used in solar cooker.** A. Concave mirror.

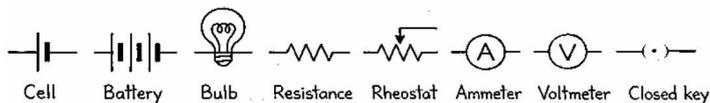
Q. The ability of eye lens to adjust its focal length is called

A. Accommodation.

Question 6:

Q. Draw the symbol of battery, bulb, resistance, rheostat, ammeter, voltmeter, key etc.

A.



Q. Find the radius of curvature of a convex mirror whose focal length is 15 cm.

A. Radius of Curvature $R = 2 \times 15 \text{ cm} = 30 \text{ cm}$.

Q. The magnification produced by a plane mirror is +1. What does this mean?

A. It means the image formed is virtual, erect, and the exact same size as the object.

Q. The radius of curvature of a spherical mirror is given as 20 cm then Determine it's focal length.

A. The focal length $= \frac{R}{2} = \frac{20}{2} = 10 \text{ cm}$.

Q. Find the focal length of a convex mirror whose radius of curvature is 32 cm.

A. The focal length $= \frac{R}{2} = \frac{32}{2} = 16 \text{ cm}$.

Q. Find the power of a concave lens of focal length 2 m.

A. Power $P = 1/f = 1/-2 = -0.5 \text{ D}$

Question 7:

Q. Which device is used to measure voltage in the circuit?

A. Voltmeter.

Q. Pentayya cannot read the newspaper clearly. What type of eye defect does he have?

A. Hypermetropia (far-sightedness).

Q. The change in focal length of an eye lens is caused by the action of the _____

a) pupil b) retina c) ciliary muscles d) iris.

A. c) ciliary muscles.

Q. Write one use of ciliary muscles in human eye.

A. Ciliary muscles help in accommodation of eye lens.

Q. The change in the curvature of the eye lens can thus change its _____

A. Focal length.

Q. Which material is the best conductor of electricity?

A. Silver.

Q. How is an ammeter connected in a circuit?

A. In series.

Question 8:

Q. How can three resistors of resistances 2Ω , 3Ω and 6Ω be connected to give a total resistance of 1Ω , ?

A. Parallel Connection.

Q. How can three resistors of resistances 2Ω , 3Ω and 6Ω be connected to give a total resistance of 11Ω , ?

A. Series Connection.

Q. If two resistors of 6Ω , and 12Ω , were given to you, then how do you connect them to get 4Ω , as resultant resistance.

A. Parallel Connection.

Q. What is the lowest resistance that can be obtained by combining four coils of resistance 4Ω , 8Ω , 12Ω and 24Ω ?

A. Parallel Connection.

Q. Write any two daily life applications of Lenses.

- A. 1. Lenses are used in spectacles.
2. Lenses are used in microscopes and cameras.

Q. For driving a car, what type of mirror would you prefer to see traffic at your back and why?

- A. 1. A convex mirror is preferred.
2. Because it always forms a virtual, erect, and diminished image, providing a wider field of view for the driver.

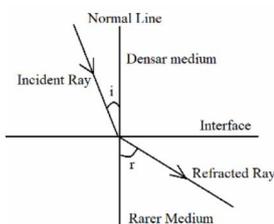
Q. Explain esterification reaction with an example.

- A. 1. The reaction between a carboxylic acid and an alcohol form a sweet-smelling substance called an ester.
2. **Example:** Ethanoic acid reacting with ethanol to form ethyl ethanoate.

Question 11

Q. Predict what happens to a light ray travels from denser medium to rarer medium?

- A. The light ray's speed increases and it bends away from the normal.



Q. Why should we connect electric appliances in parallel in a household circuit? What happens if they are connected in series?

- A. 1. In a parallel circuit, if one component fails, the others still work.
2. But in a series arrangement, if one component fails, the entire circuit breaks.

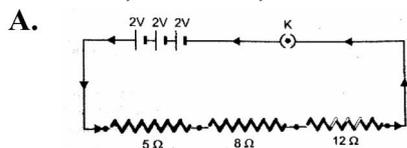
Q. Predict what happens to the resistance of the conductor if its length is doubled?

- A. 1. The resistance will also be doubled.
2. Because $R \propto l$

Q. One-half of a convex lens is covered with a black paper. Will this lens produce a complete image of the object? Verify your answer.

- A. 1. Yes, it will still produce a complete image of the object.
2. However, the brightness (intensity) of the image will be reduced.

Q. Draw a schematic diagram of a circuit consisting of a battery of three cells of 2V each, a 5 ohms, 8 Ohms and 12 ohms resistors, and a plug key all connected in series.



Q. Write any two daily life applications of corrosion?

- A. 1. Rusting of Iron 2. Tarnishing of Silver.

Q. Why are copper and aluminium wires usually employed for electricity transmission?

- A. 1. They have very low electrical resistivity.
2. So they act goodconductors of electricity with minimal heat loss.

Section - III (4-Mark Questions)

Question 12: (Practice the following diagrams)

- (a) Ray Diagrams of Concave and convex mirros
(OR)

- (b) i. Reaction of Zinc granules with dil.HCl
 ii. Reaction of metals with carbonates.
 iii. Acidic/basic solution of water conduct electricity.
 iv. Electrolytic refining of metals
 v. Reaction of metals with water

Question 13:

Q. 1. Give important uses of washing soda and baking soda.

- A. Uses of washing soda(Na_2CO_3):** 1. It is used in glass, soap and paper industries.
 2. It is used for removing the permanent hardness of water.

Uses of baking soda(NaHCO_3):

1. It is used in soda-acid fire extinguishers.
 2. It is used as a mild antiseptic.

Q. Give important uses of Bleaching powder and Plaster of Paris.

- A. Uses of Bleaching Powder:** 1. It is used textile industry and laundry shops.
 2. It is used to kill the germs in the water.

Uses of plaster of paris: 1. Plaster of paris used in making toys.

2. It is used in interior decoration of buildings.

Q. Write any four uses of metals.

- A. Uses of metals:** 1. **Copper:** Used in electrical wires at homes and electronics.
 2. **Iron:** Used in various industrial applications and for making wire mesh and fencing.
 3. **Nickel:** Nickel wires are used in heating elements.
 4. **Gold & Silver:** Used in jewellery making.

Q. Write any four uses of Non-metals.

- A. Uses of non-metals:** 1. Oxygen is used for breathing.
 2. Chlorine is used for purifying water.
 3. Graphite is used as a good conductor of electricity.
 4. Iodine is used as tincture iodine.

Question 14:

Q. The refractive index of some materials are given below.

Material	Air	Ice	Rubby	Benzene
Refractive index	1.0003	1.31	1.71	1.50

Based on the above information answer the following questions:

- i) Which material medium light travels faster or rarer medium?
 ii) In which material medium the speed of light is least or denser medium?
 iii) What is the speed of light in air?
 iv) Calculate the speed of light in Benzene? ($c = 3 \times 10^8$ m/s)
- A.** i). Air
 ii). Benzene.
 iii) $c = 3 \times 10^8$ m/s
 iv). Speed of light in Benzene ($v = \frac{c}{n} = 3 \times 10^8 / 1.5 = 2 \times 10^8$ m/s)

Q. The refractive index of some materials are given below.

Material	Air	Ice	Rubby	Benzene
Refractive index	1.0003	1.31	1.71	1.50

Based on the above information answer the following questions:

- Which material medium is optically rarer?
- Which material medium is optically denser?
- Write the relation between refractive index and speed of light in the medium?
- What is the SI unit of Refractive Index?
- Arrange the above material media in the ascending order with respect to the speed of light.

- A. i). Air
 ii). Ruby
 iii). $n \propto \frac{1}{v}$ (or) Inversely proportional
 iv). No units.
 v). Benzene < Water < Ice < Air

Q. Observe the following pH values and answer the following questions?

Solution	Water	Coffee	Milk	Blood	Milk of megnesia	Sodium carbonate
pH value	7.0	5.0	6.5	7.3	10.5	12.7

- Which are basic in nature?
- Which are acidic in nature?
- Write the H^+ ion concentration of water?
- Which is suitable to use as an antacid?

- A. a) Milk of magnesia, blood and sodium carbonate.
 b) Coffee and milk.
 c) 10^{-7} mol/lit.
 d) Milk of magnesia.

Q. Observe the table and answer the following questions:

Solution	A	B	C	D	E	F	G	H
pH Value	8	2	6	7	13	1	9	12

- Which solution is neutral ?
- Which solutions are strong acids?
- Which solutions are strong bases?
- Which solutions are weak bases?

- A. (i). D
 (ii). B and F
 (iii). E and H
 (iv). A and G

Section - IV (8-Mark Questions)

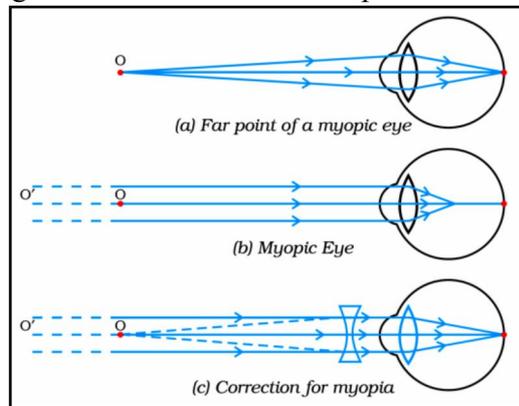
15.(a) Question:

1. Explain, how do you correct the eye defect Myopia with a suitable diagram.

(OR)

Sreekar is not able to see the letters clearly far from him. Identify the eye defect he has been suffering from and how can you rectify it? Explain.

- A.
1. **Myopia:** Some people able to see closer objects, unable to see far objects.
 2. Such vision defect is called myopia.
 3. Myopia is also known as near-sightedness.
 4. For these people the image of an distant object formed in front of the retina.
 5. **Reason:** a) Excessive curvature of the eye lens
b) Elongation of the eyeball.
 6. **Correction:** Using a concave lens of suitable power.

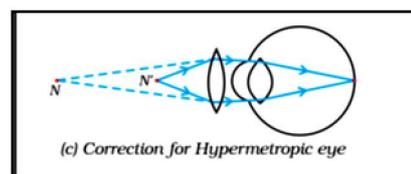
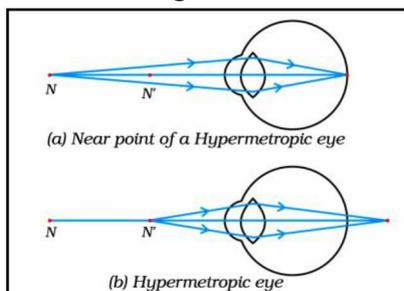


2. Explain the correction of the eye defect Hypermetropia with a suitable diagram.

(OR)

Sreekar is not able to see the letters clearly near from him. Identify the eye defect he has been suffering from and how can you rectify it? Explain.

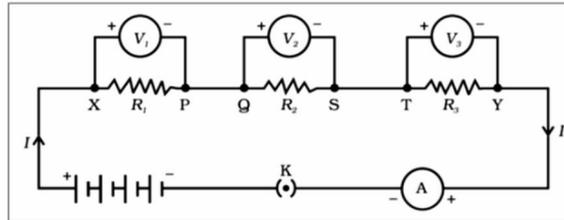
- A.
1. **Hypermetropia:** Some people able to see far objects, unable to see closer objects.
 2. Such vision defect is called Hypermetropia.
 3. Hypermetropia is also known as far-sightedness.
 4. For these people the image of a near object formed behind the retina.
 5. **Reason:** a) The focal length of the eye lens being too long
b) The Eyeball has become too small
 6. **Correction:** Using a convex lens of suitable power.



15.(b) Question:

3. Deduce the expression for the equivalent resistance of three resistors connected in series

- A. 1. R_1 , R_2 and R_3 are the three resistors connected in series as shown in the figure.
 2. Three voltmeters V_1 , V_2 and V_3 connected parallel to the three resistors R_1 , R_2 and R_3 .
 3. Let 'I' be the current and 'V' is the resultant potential difference in the circuit.



4. From Ohm's law $V = IR \Rightarrow$ at R_1 , R_2 and R_3 the potential differences are,
 $V_1 = I R_1$, $V_2 = I R_2$ and $V_3 = I R_3$
 5. In series the total potential difference is, $V = V_1 + V_2 + V_3$

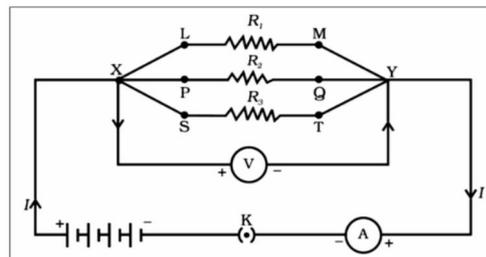
$$I R = I R_1 + I R_2 + I R_3$$

$$I R = I (R_1 + R_2 + R_3)$$

$$R = R_1 + R_2 + R_3$$

4. Deduce the expression for equivalent resistance for three resistors connected in parallel.

A.



1. R_1 , R_2 and R_3 are the three resistors connected as parallel as shown in the figure.
 2. Let 'I' be the current and 'V' be the potential difference in the circuit.
 3. Ohm's law as, $I_1 = \frac{V}{R_1}$, $I_2 = \frac{V}{R_2}$ and $I_3 = \frac{V}{R_3}$.
 5. In parallel combination, the total current is, $I = I_1 + I_2 + I_3$

$$\frac{V}{R} = \frac{V}{R_1} + \frac{V}{R_2} + \frac{V}{R_3}$$

$$V \left(\frac{1}{R} \right) = V \left(\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} \right)$$

$$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$$

$$\Rightarrow R = \frac{R_1 R_2 R_3}{R_1 R_2 + R_2 R_3 + R_3 R_1}$$

5. Explain the following.

- | | |
|---------------------|----------------------------|
| i) Electric current | ii) Potential difference |
| iii) Ohm's law | iv) Electric power |
| v) Resistance | vi) Joule's law of heating |

- A. Electric current:** 1. Electric current(I) = $\frac{\text{electric charge}(Q)}{\text{time interval}(t)}$.
2. The SI unit of electric current is ampere denoted by A.

Potential difference: 1. Voltage (v) = $\frac{\text{Workdone}(W)}{\text{charge}(Q)}$.

2. Its SI unit is Volt.

Ohm's Law: 1. At constant temperature the potential difference is directly proportional to its current.

$$\begin{aligned} \text{i.e } V &\propto I \\ \Rightarrow V &= IR \end{aligned}$$

Where R is called the resistance of the conductor.

2. Its SI unit is ohm(Ω)

Electric power: 1. Electric power is the product of potential difference and the current.

$$\text{i.e } P = VI$$

2. The S.I. unit of electric power is watt.

Resistance: 1. The obstruction to the motion of the electrons in a conductor is called resistance.

2. Its unit is ohm(Ω).

Joule's law of heating: Joule's law of heating states that the heat produced (H) in a conductor is directly proportional to the square of the current (I^2), the resistance (R), and the time (t) for which current flows.

$$\therefore H = I^2RT$$

16.(a) Question:

1. Balance the following chemical equations.

- | | |
|--|---|
| (a) $\text{HNO}_3 + \text{Ca(OH)}_2 \rightarrow \text{Ca(NO}_3)_2 + \text{H}_2\text{O}$ | a) $2\text{HNO}_3 + \text{Ca(OH)}_2 \rightarrow \text{Ca(NO}_3)_2 + 2\text{H}_2\text{O}$ |
| (b) $\text{NaOH} + \text{H}_2\text{SO}_4 \rightarrow \text{Na}_2\text{SO}_4 + \text{H}_2\text{O}$ | (b) $2\text{NaOH} + \text{H}_2\text{SO}_4 \rightarrow \text{Na}_2\text{SO}_4 + 2\text{H}_2\text{O}$ |
| (c) $\text{NaCl} + \text{AgNO}_3 \rightarrow \text{AgCl} + \text{NaNO}_3$ | (c) $\text{NaCl} + \text{AgNO}_3 \rightarrow \text{AgCl} + \text{NaNO}_3$ |
| (d) $\text{BaCl}_2 + \text{H}_2\text{SO}_4 \rightarrow \text{BaSO}_4 + \text{HCl}$ | (d) $\text{BaCl}_2 + \text{H}_2\text{SO}_4 \rightarrow \text{BaSO}_4 + 2\text{HCl}$ |
| (e) $\text{Pb(NO}_3)_2(\text{s}) \xrightarrow{\Delta} \text{PbO}(\text{s}) + \text{NO}_2(\text{g}) + \text{O}_2(\text{g})$ | (e) $2\text{Pb(NO}_3)_2(\text{s}) \xrightarrow{\Delta} 2\text{PbO}(\text{s}) + 4\text{NO}_2(\text{g}) + \text{O}_2(\text{g})$ |
| (f) $\text{Fe}(\text{s}) + \text{CuSO}_4(\text{aq}) \rightarrow \text{FeSO}_4(\text{aq}) + \text{Cu}(\text{s})$ | (f) $\text{Fe}(\text{s}) + \text{CuSO}_4(\text{aq}) \rightarrow \text{FeSO}_4(\text{aq}) + \text{Cu}(\text{s})$ |
| (g) $\text{CH}_4 + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$ | (g) $\text{CH}_4 + 2\text{O}_2 \rightarrow \text{CO}_2 + 2\text{H}_2\text{O}$ |
| (h) $\text{AgBr} \rightarrow \text{Ag} + \text{Br}_2$ | (h) $2\text{AgBr} \rightarrow 2\text{Ag} + \text{Br}_2$ |
| (i) $\text{H}_2 + \text{Cl}_2 \rightarrow \text{HCl}$ | (i) $\text{H}_2 + \text{Cl}_2 \rightarrow 2\text{HCl}$ |
| (j) $\text{H}_2 + \text{O}_2 \rightarrow \text{H}_2\text{O}$ | (j) $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$ |
| (k) $\text{Fe} + \text{H}_2\text{O} \rightarrow \text{Fe}_3\text{O}_4 + \text{H}_2$ | (k) $3\text{Fe} + 4\text{H}_2\text{O} \rightarrow \text{Fe}_3\text{O}_4 + 4\text{H}_2$ |

2. What is a water of crystallisation? Write a procedure to observe the water of crystallisation in copper sulphate.

A. Aim: To show crystalline salts contain water of crystallization.

Materials required: Copper sulphate crystals ($\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$), Boiling tube Burner, A pair of tongs.

Procedure: 1. Heat a few crystals of copper sulphate in a dry boiling tube.

2. The colour of copper sulphate after heating is white.

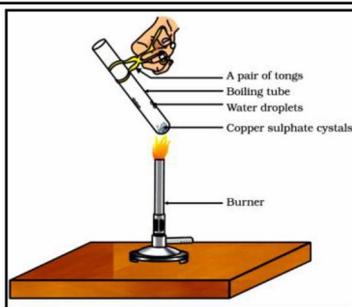
3. Water droplets in boiling tubes are seen due to condensation of water of crystallization of copper sulphate.

4. Add 2 – 3 drops of water to the sample of copper sulphate obtained after heating.

5. **Chemical equation:** $\text{CuSO}_4 \cdot 5\text{H}_2\text{O} \xrightarrow{\Delta} \text{CuSO}_4 + 5\text{H}_2\text{O}$

Blue Colour

White Colour

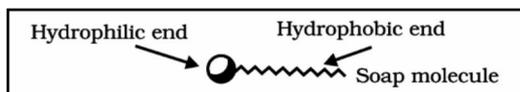


5. **Observation:** On adding 2 – 3 drops of water to the sample of copper sulphate, obtained after heating, the blue colour of copper sulphate is restored.

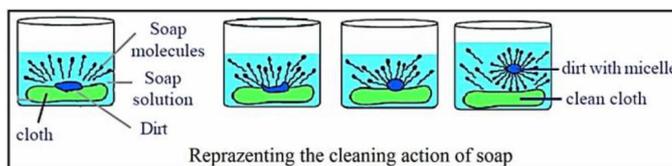
16.(b) Question:

3. Explain the mechanism of the cleaning action of soaps

- A.
1. The molecules of soap are sodium or potassium salts of long-chain carboxylic acids.
 2. Most dirt is oily in nature, and it does not dissolve in water.
 3. The ionic end (Hydrophilic) of Soap interacts with water, while the carbon chain (Hydrophobic) interacts with oil.



4. Soap molecules thus form structures called micelles.
5. Where one end of the molecules is towards the oil droplet, while the ionic end faces outside.
6. This forms an emulsion in water.
7. The soap micelle thus helps in pulling out the dirt in water, and we can wash our clothes clean.



4. How can ethanol and ethanoic acid be differentiated based on their physical and chemical properties.

Ethanol	Ethanoic acid
Physical Properties	
1. Ethanol is a liquid commonly called alcohol.	1. Ethanoic acid is commonly called acetic acid.
2. Ethanol is a good solvent used in medicines.	2. It is used as a preservative in pickles
Chemical properties	
3. Ethanol reacts with sodium to give hydrogen gas. $2C_2H_5OH + 2Na \rightarrow 2C_2H_5ONa + H_2\uparrow$	3. Ethanoic acid reacts with NaOH to give sodium acetate and water. $CH_3COOH + NaOH \rightarrow CH_3COONa + H_2O$
4. Heating ethanol with conc. H_2SO_4 gives ethene. $C_2H_5OH \xrightarrow{conc. H_2SO_4} C_2H_4 + H_2O$	4. Ethanoic acid reacts with carbonates and hydrogen carbonates to give salt and water. $2CH_3COOH + Na_2CO_3 \rightarrow 2CH_3COONa + H_2O + CO_2$

5. Complete the following table.

No. of carbon in Hydrocarbon	Alkane	Alkene	Alkyne
3	C_3H_8		
4		C_4H_8	
5			C_5H_8
6		C_6H_{12}	

No. of carbon in Hydrocarbon	Alkane	Alkene	Alkyne
3	C_3H_8	C_3H_6	C_3H_4
4	C_4H_{10}	C_4H_8	C_4H_6
5	C_5H_{12}	C_5H_{10}	C_5H_8
6	C_6H_{14}	C_6H_{12}	C_6H_{10}

6. Complete the following table.

Functional group	Suffix	The formula of a functional group	Example
Alcohol			CH_3OH
Aldehyde	- al		
		- CO-	CH_3COCH_3
	- oic acid		CH_3COOH

Functional group	Suffix	The formula of a functional group	Example
Alcohol	- ol	-OH	CH_3OH
Aldehyde	- al	-CHO	CH_3CHO
Ketone	- one	- CO-	CH_3COCH_3
Carboxylic acid	- oic acid	-COOH	CH_3COOH

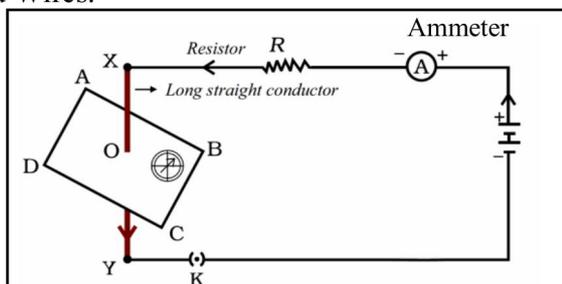
17.(a) Question:

7. Explain the procedure to show that compass needle is deflected on passing an electric current through a metallic conductor (Oersted's experiment).

A. **Aim:** To show that the compass needle is deflected on passing an electric current through metallic conductors.

Materials Required: Thick copper wire, cardboard, Magnetic Compass, Resistor, Ammeter, Cell and Wires.

Procedure:



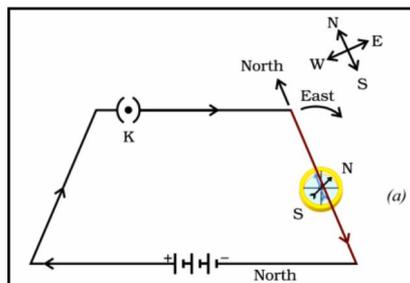
1. Fix a thick copper wire X and Y placed perpendicular to the plane of the paper.
2. Horizontally place a small compass near the wire.
3. Pass the current through the circuit by inserting a key.
4. Observe the change in the position of the compass needle.
5. **Observation:** The position of the compass needle changed.
6. Hence Electric current through a copper wire has produced a magnetic field.

8. Describe an activity to show the direction of magnetic field lines, produced by a current-carrying conductor.

A. Aim: to study the direction of magnetic lines produced by a current carrying conductor.
Materials Required: Two or three cells, copper wire, compass, Plug Key & connecting wires.

Procedure:

1. Take a long straight wire, three cells, plug the key and connect them in series.
2. Place the straight wire parallel to and over the compass needle.
3. Plug the key into the circuit.
4. Observe the direction of deflection of the north pole of the needle.
5. If the current flows from north to south. The north pole of the compass needle would move towards the East.

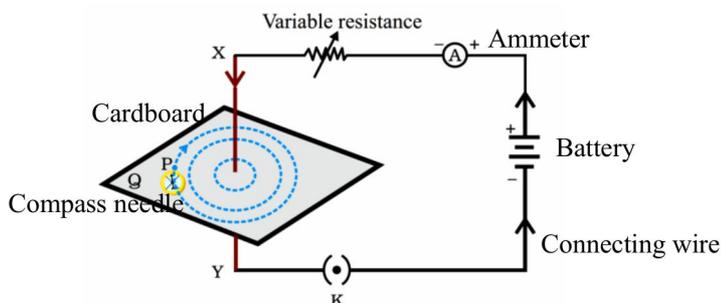


6. Reverse Cell connections.
7. Now the current flow is from South to North.
8. You will see the needle move in opposite directions, i.e., towards the west.
9. Hence, the direction of magnetic lines produced by a current carrying conductor was observed.

9. Describe an activity to draw the magnetic field produced around a current carrying straight conductor.

A. Aim: To draw a magnetic field produced around a straight current carrying conductor.
Materials Required: Cardboard, Variable Resistance, Battery, Plug Key, Connecting Wires, Ammeter.

Procedure:



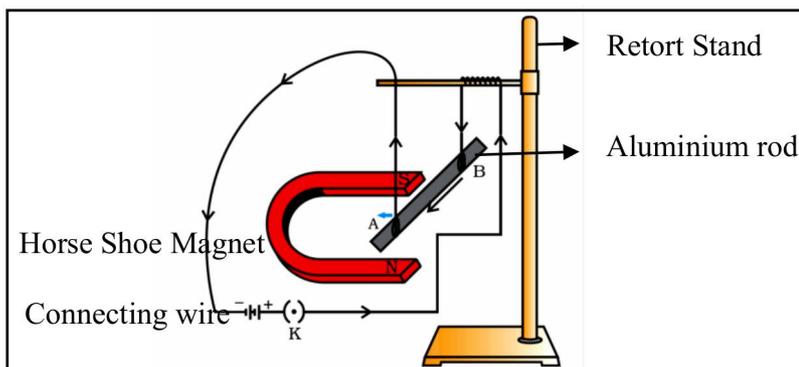
1. The apparatus are arranged as shown in the figure.
2. Sprinkle some Iron Filings uniformly on the cardboard.
3. Close the Key, and gently tap the cardboard a few times.
4. Iron filings align themselves, showing a pattern of concentric circles around the copper wire.
5. These concentric circles represent magnetic field lines.
6. **Observation:** We have observed a magnetic field produced around a straight current carrying conductor.

10. Describe an activity on the force experienced by the current carrying conductor placed in a magnetic field.

A. Aim: To verify the force experienced by the current carrying conductor placed in a magnetic field.

Apparatus: Small aluminium rod, Horseshoe magnet, Stand, Battery, Plug key, connecting wires

- Procedure:**
1. Take a small aluminium rod.
 2. Using two connecting wires, suspend it horizontally.
 3. Place a strong horseshoe magnet in such a way that the rod lies between the two poles of the magnet.
 4. Connect the aluminium rod in series with a battery and a key.
 5. Pass current through the aluminium rod from B to A
 6. We will observe that the rod is displaced towards the left.
 7. If we reverse the direction of the current, the rod displaces towards the right.
 8. **Observation:** We have observed that force is working on the current carrying conductor in a magnetic field.



17.(b) Question:

11. Suggest an experiment to prove that the presence of air and water is essential for corrosion. Explain the procedure.

A. Aim: To prove that the presence of air and water are essential for corrosion.

Apparatus: Three test tubes, three corks, Distilled water, anhydrous calcium chloride, clean iron nails and oil etc.

Procedure: 1. Take 3 test tubes and place clean iron nails in each of them.

2. Label the test tubes A, B and C.

3. Test tube A: Water, air and nails.

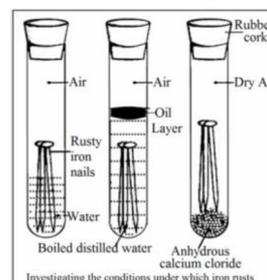
4. Test tube B: Water, nails and oil.

5. Test tube C: Nails and anhydrous CaCl₂.

6. Leave these test tubes for a few days and then observe.

7. **Observations:** We will observe that, iron nails rust in test tube A,

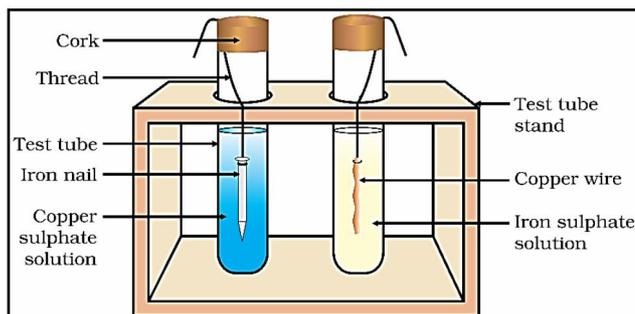
8. **Conclusion:** Hence air and water are essential for corrosion.



12. How do metals react with solutions of other metal salts? Describe an activity.

A. Aim: To observe how the reactive metals can displace less reactive metals from their compounds in solution.

Required Materials: Copper wire, Iron nail, Iron sulphate solution, Copper sulphate solution, Test tubes etc.



- Procedure:**
1. Take a clean wire of copper wire and an iron nail.
 2. Put the copper wire in a solution of iron sulphate and the iron nail in a solution of copper sulphate.
 3. Record your observations after 20 minutes.
 4. In first test tube the blue colour of the copper sulphate solution starts fading.
 5. This is a displacement reaction.
 6. In second test tube no reaction takes place.
 7. **Observation:** Reactive metals can displace less reactive metals from their compounds in solution.
 8. Iron metal displaces copper metal from its solution, iron is more reactive than copper.

13. Describe an activity in which metals react with water (Action of steam on a metal).

A. Aim: Observe the reactions of different metals with water.

Required Materials: Different metals, Stands, Burner, Test tube, Delivery tube, Glass jar.

Procedure: 1. Collect the samples of the metals like aluminium, iron, zinc, potassium, sodium, calcium, magnesium, etc.

2. Test these samples with cold water, hot water and steam.
3. Sodium and Potassium react with water and catch fire.

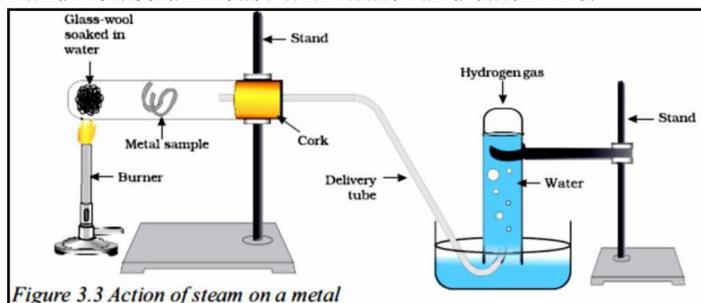


Figure 3.3 Action of steam on a metal

4. Magnesium react with hot water.
5. Al, Fe and Zn react with steam.
6. Pb, Cu, Ag and Au not react with water at all.
7. The reactivity of metals with water decreases in the order.

$$K > Na > Ca > Mg > Al > Zn > Fe$$

14. How to show that metals are good conductors of heat with the help of an activity.

A. Aim: To show that metals are good conductors of heat.

Required Materials: Copper/Aluminium wire, Stand, Clamp, Burner

- Procedure:**
1. Take an aluminium or copper wire.
 2. Clamp this wire on a stand, as shown in Fig.
 3. Fix a pin to the free end of the wire using wax.
 4. Heat the wire with a spirit lamp, candle or burner near the place where it is clamped.
 5. **Observations:** When aluminium or copper wire is heated at one end, heat reaches the other end, melting the wax, and the pin gets detached.
 6. Metals are good conductors of heat.

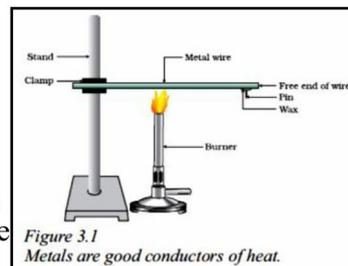


Figure 3.1
Metals are good conductors of heat.