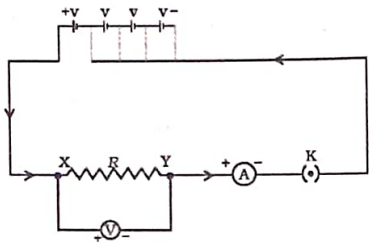
iii) Note Down respective readings of ammeter and voltmeter for values of current through and potential difference across nichrome wire Y respectively.

iv) Repeat steps using three cells and then four cells series.

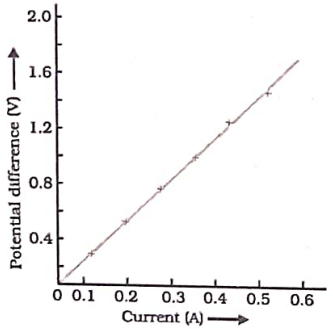
v) Calculate V/I for each part of potential difference V and current I.

plot a graph between V and I and observe the nature of the graph.



Observations :

We observe that the ratio V/I is approximately the same so the graph between V and I is a straight line. A straight -line graph shows that as the current throuth the wire XY increases, the potential difference across the wire increases. This is called Ohm's law.



Conclusion:

The ratio of V and I is a constant and this constant ratio is called resistance.

(OR)

17. B) **Aim :** To demonstrate electolysis of water.

Materials Requried : Plastic mug, two graduated measuring cylinders, drilling machine, carbon electrodes, 6 volt battery, dil. H_2SO_4, Water

Procedure :

i) Take a plastic mug. Drill two holes at its base

ii) Fit two rubber stoppers in these holes.

iii) Insert two carbon electodes in these rubber stoppers.

iv) Connect these electrodes to a 6V battery.

v) Fill the mug with water, so that the electrodes are immersed.

vi) Add a few drops of dil. H_2SO_4, Water

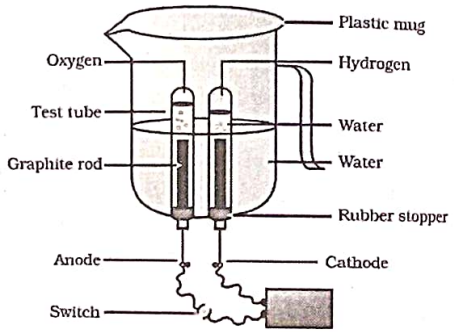
vii) Switch on the current and leave the apparatus undisturebed for some time.

viii) Switch on the current and leave the apparatus undisturbed for some time.

ix) We will notice tha liberation of gas bubbles at both electrodes. These bubbles displace the water in the test tubes.

x) Observe the volume of gases collected in the inverted test tubes.

xi) Test both the gases separately by brining a burning candle near the mouth of each test tube.



Observations :

i) The volume of hydrogen gas is twice the volume of oxygen.

ii) One of the gases (H_2)catches fire and burns with pop sound and in O_2 gas matchstick burns brightly.

Conclusion:

i) Water on electorlysis decomposes to hydrogen and oxygen gas.

ii) Hydrogen gas burns exposively whereas oxygen gas helps in burning.

MODEL PAPER -IV
PHYSICAL SCIENCE PAPER-I

(19E)

Class : X **Max.Marks : 50** **Time : 2hrs.15min.**

Instructions :

1. Question paper consists of 4 sections and 17 questions.
2. Internal choice is available only Q.No. 12 in Section III and for all the questions in Section-IV
3. In the duration of 2 house, 15 minutes of time is allotted to read the Question paper.
4. All answers should be written in the answer booklet only.
5. Answer should be written neatly and legibly.

SECTION - I **8 × 1 = 8 M**

1. Answer **all** the questions.
2. Each question carries **1** marks.

1. Which substance is oxidised in the equation $Cu0+H_2 \rightarrow Cu+H_20$
2. ————Mirror is used as rear view mirror in vehicles.
3. Absorve the table and answer the following question.

Alkane	Methane	Ethane	Propane	Butane
Molecular formula	CH_4	C_2H_6	C_3H_8	C_4H_{10}

Write the molecular formula for next all can comes after butane.

4. Name the sodium compound which is used for softening hard water?
5. What is the use of vinegar?
6. Electrical wires have a coating of an insulating material the material generally used is.....

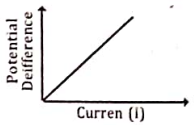
a) sulphur b)graphite c)PVC d)all can be used.

7. Brother diagram showing lag key in closed position?
8. What is tyndall effect?

SECTION - 2 **3 × 2 = 6 M**

1. Answer **all** the questions.
2. Each question carries **2** marks.

9. A v-i graph for nichrome wire is given below. what do you infer from this graph.



10. A fish under water viewing obliquely at fisherman standing on the bank of the lake. Does the man appear taller or shorter than what actually is.?
11. List two methods of producing magnetic fields?

SECTION - III **3 × 4 = 12 M**

1. Answer **all** the questions.
2. Each question carries **4** marks.

12. Draw any one of the following diagrams.

A) Draw the ray diagrams, which show the formation of images by a concave mirror in the object is placed

1) At centre of curvature

2) Between centre of curvature and principle focus. Write it's characters also.

OR

B) Draw a neat diagram which shows the reaction of zinc granules with the dilute sulphuric acid and test hydrogen gas by burning match stick or candle

13. How do you appreciate the role of lenses in our day to day life?

14. 1) Which of the letters represents a strong acid

2) out of K,L which is strong base

3) Which of the letters represent a weak base.

4) which letter represents neutral?

SECTION - IV **3 × 8 = 24 M**

1. Answer **all** the questions.
2. Each question carries **8** marks.
3. Each question has internal choice.

15. A) Explain the meaning of overloading of an electric circuit list two possible causes due to which overloading may occur in household circuit s. Write one preventive measure that should be taken to avoid overloading of domestic circuits.

OR

B) What is the role of iris and pupil in controlling the amount of light that enters the eye?

16. A) Right one equation each for decomposition reactions where energy is supplied in the form of heat light or electricity.

OR

B) Why do ionic compounds do not conduct electricity in solid state but conduct electricity in molton and aqua state?

17. A) How do you prove that a current carrying conductor experience is a force in a magnetic field and the direction of force depends on the direction of electric current and magnetic field.

OR

B) Explain the experimental procedure to investigate the conditions under which iron rusts.

ANSWERS

SECTION 1

1. H_2
2. Convex
3. Pentane (C_5H_{12})
4. Washing soda ($Na_2CO_3.10H_2O$) he is the sodium compound which is used for softening hard water.
5. Vinegar is used as preservative in pickles
6. C. (pvc)
7. ——(.)——
8. The scattering of a beam of light by the colloidal particles is called the tyndall effect.

SECTION 2

9. As graph is a straight line ,it is clear from the graph that V&I.

   From ohm's law V= IR or R=V/I.

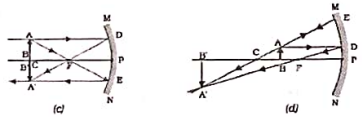
   So the slope of V-I graph at any point represent the resistance of the given conductor.

10. 1) Since fisherman is in rarer medium, the rays travel from rarer to denser medium. They bend towards the normal and appear to come from a larger distance. so , to a fish underwater the man seems to be taller than his actual height.

11. The sources of magnetic fields are as follows.
    1) Electromagnets
    2) Permanent magnets
    3) Current carrying conductors

SECTION 3

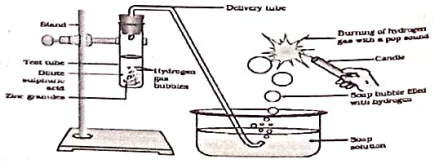
12.



(c) (d)

i) Image is formed at centre of curvature
ii) Image is real
iii) Image is inverted
iv) Image is of same size as object

B)



i) Image is formed beyond centre of curvature
ii) Image is real
iii) Image is inverted
iv) Image is entarged

13. A) 1) Lens are used in eye glasses and contact lenses to correct vision problems under to help people to see more clearly
    2) Lenses are used in cameras and smartphones to capture images and record videos .3)lenses are used in microscopes to magnified small objects and to study microscopic organisms and structures.
    4) Lenses are used in telescopes to study about stars and galaxies.
    5) Lenses are used in binocular and telescopes to observe distant objects.
    6) Lenses are used in projector to display images and videos on your lost screen.
    7) Lenses are used in magnifying glasses and reading glasses to help people to see smaller objects more clearly.

14.
1) X and Y are strong acids.
2) L is strong base than K.
3) K,L are weak bases.
4) A is neutral.

SECTION 4

15. A) overloading

Overloading of an electric circuit helps happens when an excessive amount of current flows through the wires .

Two main causes of overloading :

1) Short circuit due to contact between the live and neutral wire. this greatly reduces resistance and increases current flow.
2) Connecting too many high power appliances to a single circuit. the combined load exceed the circuits capacity.

Preventive measures :

1) Use wires with proper insulation and current ratings for the circuit. This prevents overheating.
2) Avoid plugging too many appliances in one socket distribute load evenly. Install fuses or circuit breaker that will automatically break the circuit if excess current is detected.

15) B) 1) The iris is the coloured part of the eye that surrounds the pupil and controls the amount of light that enters the eye.
2) The pupil is opening in the centre of the iris that allows light to enter the eye.
3) The iris and pupil work together to control the amount of light that enters into the eye , depending on the lighting conditions
4) In bright light, the iris contract and the pupil becomes smaller to reduce the amount of light entering the eye.
5) In dim light the iris and the pupil becomes larger to allow more light to enter the eye. the changes in the size of the pupil are a reflex action control by the autonomous nervous system.
6) The size of pupil afects the depth of field over objects are focus. A larger pupil results in a shallwer depth of field.
7) Zbnormal pupil size or shape can be aside of an underlying medical condition such as brain injury or other disorders.
8) Wearing sunglasses or a hat with a brim can help protect the eyes from bright light and reduce the risk of eye damage.

16. A) 1) When calcium carbonate is heated it a decomposes to cure calcium oxide and carbon dioxide.

i) $CaCO_3(s) \xrightarrow{Heat} CaO(s) + CO_2(g)$

2) When silver chloride is exposed to like it decomposes to form silver metal and chlorine gas

ii) $2AgCl(s) \xrightarrow{Ligh} 2Ag(s) + Cl_2(g)$

3) When electric current is passed through a certified water it decomposes to give hydrogen and Oxygen gas

iii) $2H_2O(l) \xrightarrow{Electricity} 2H_2(g) + O_2(g)$

OR

16. B) 1) In solid state the ions in an ionic compound are held in a rigid lattice structure and or not free to move.
2) Since there are no freecharge particles , the solid ionic compound cannot conduct electricity.

3) When an ionic compound is melted or dissolved in water the ions become free to move and can carry an electric charge.

4) In the molten or aqueous state. The ionic compound can conduct electricity. 5) the conductivity of an ionic compound in the molton or Aqueous state depends on the concentration of irons, the charge on the iron and their mobility.

6) Ionic compounds conduct electricity by the moment of cations towards the negative electrode and anion towards positive electrodes.

7) The ability of ionic compound to conduct electricity is an important factor in its application such as in batteries and electrolysis.

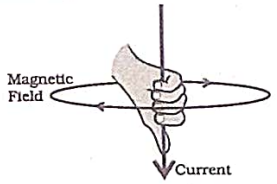
17. A)

Aim: to prove that a current carrying conductor experience is a force in a magnetic field and the direction of force depends on the direction of electric current and magnetic field.

Materials required:

aluminium rod horse shoe magnet retort stand battery plug ki real start and connecting wires procedure take a small aluminium rod ab using two connecting wires suspended horizontal from a stand place a strong horses to magnet in such a way that the rod lies between two poles with the magnetic field directed upwards for this put the north pole of the magnet vertically below the South pole vertically above the aluminium rod connect the aluminium road in series with a battery and area start now fast a current through aluminium rod from the end B to the end A.

It is observed that the rod is displaced towards the left we will notice that the rod gets displaced rivers the direction of flow of current through displacement it is now towards right.



Observation :

And Aluminium rod place in a magnetic field get displace upward and downward when current is passed through it conclusion current carrying conductor experience is a force in a magnetic field and the direction of force depend on the direction of current and magnetic field flaming left hand rule is used to determine the direction of force on a current carrying conductor.

17. B)

Rusting is a process in which redish brown coating of hydrated ferric oxide is formed on the surface of iron.

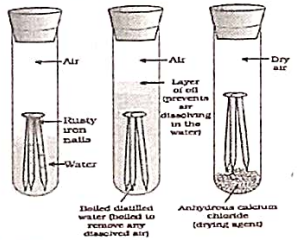
Aim: to show that air and water are necessary for rusting.

Materials required:

Three boiling tubes, iron nails, cork, unhydrous calcium chloride, oil.

Procedure:

1) take 3 test tubes and place clean iron nails in each of them.
2) label these test tube has A, B and C.
3) Pour water in test tube A and cark it.
4) Pour boiled distilled water in the test tube add about 1 ml of oil and cark it
5) the oil will float on water and prevent the air from dissolving in the water.
6) put some unhydrous calcium chloride in the test tube C and cork it. Anhydrous calcium chloride will absor the moisture if any from the air.
7) leave the test tube for a few days and observe.



Observations :

1) Iron nails rust in the test tube A but they do not trust in the test tube B and C.
2) In the test tube A nails are exposed to both air and water.
3) In the test tube B, the nails are exposed to only water.
4) The nails in the test tube C are exposed to dry air.

The conclusion

From this we can conclude that iron gets rust in the presence of air and water.