MODEL PAPER -III
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. If two solutions of pH 2 and 5 respectively are given, which will be stronger acid ?Why ?
2. An important ore of mercury is.....
3. Answer the following question by observing the table given below.

Material Medium	Refractive Index
Water	1.33
ice	1.31

Which is denser medium ?

4. Neha added quick lime to water and observed that heat is produced. What kind of reaction is this ?
5. Write one function of the crystalline lens in the human eye.
6. Number of joules in 1 kilo -watt-hour will be :
   a) 3600 b) $36x10^3$
   c) $3.6x10^5$ d) $3.6x10^6$
7. Draw the structural of benzene.
8. What name is given to the device which automatically cuts off the electricity supply during short- circuiting in household wiring ?

SECTION - 2 **3 × 2 = 6 M**

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

9. Explain why the planets do not twinkle.
10. Observe the information given in the table and answer the questions given below the table.

Substance Color (in aqueous solution)	Color change with Blue Limus	Color Change
A	Red	No Change
B	No Change	Blue
C	No Change	No Change

i) Which one of them may be the neutral salt among A, B, C ?

ii) What may happen when some drops of phenolphthalein is added to the substance B ?

11. A given length of a wire is doubled on itself and this process is repeated once again. By what factor does the resistance of the wire change ?

SECTION - III **3 × 4 = 12 M**

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

12. Draw any one of the folowing diagrams :
   A) Draw the diagram showing teh distribution of magnetic field due to a current through a circular loop ?
   B) Draw the structure of graphite.
13. Give two important uses of washing soda and baking soda.
14. Observe the table and answer the following questions.

Aspect	Description
Formation of images	Images are formed on the retina through the combined action of the cornea and lens
Inversion of retinal image	The retinal image is inverted, and the brain processes it to perceive the correct orientation
Binocular vision	The brain combines signal from both eyes to provide depth perception and a three-dimensional view
Color blindness	Color blindness results from a lack or malfunction of certain cone cells, leading to difficulty perceiving specific colors

i) How aer image fomed on the retina in the human eye ?

ii) Why does the brain the retinal image, even though it is inverted ?

iii) What is the term for the ability to perceive depth and a three-dimensional view due to the combinated signals from both eyes ?

iv) What is the nature of the image formed on retina in human eye ?

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) Write the behaviour of light rays when they are incident on spherical mirrors.

(OR)

B) What is the magnetic filed produced inside a current carrying solenoid ? How does it resemble that of a bar magnet ?

16. A) What is activity series ? How does it help in predicting the relative activity of metals ?

(OR)

B) Are both soap and detergent same type of salts? What is thedifference condutor and the current through it ?

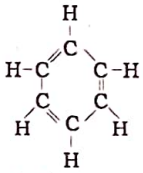
17. A) How do you find the relationship between the potential difference across a conductor and the current through it ?

(OR)

B) What are the materials required for the experiment to show the chemical decomposition of water ? Write the procedure of the experiment. Name the products which we get in this reaction.

ANSWERS

SECTION -I

1. The acid with pH 2 is stronger. Because as the pH value of a solution decreases its acidic nature increases.
2. Cinnabar
3. Water (with higer refractive index) is denser medium.
4. Exotheremic reaction.
5. The crystalline lens of human eye focuses the light that enters the eye and forms the image on the retina.
6. d ($3.6x\ 10^6$)
7. 

Benzene — C_6H_6
8. Electric fuse

SECTION - II

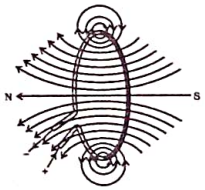
9.1. Planets don't twinle because they appear bigger than stars since they are closer to Earth.
2. Planets are made up of many small points of light.
3. The variations in brightness average out, so planets don't seem to twinkle.

10. i) The neutal salt among A,B, C is "C"
   ii) When some drops of phenolphthalein is added to the substance 'B', the aqueous solution turns into 'pink' colour.

11. i) The length of the material becomes one-fourth of its original length.
   ii) The cross-sectional area increases fourfold compared to its original size.
   iii) Consequently, the new resistance is reduced to (1/16) th of the original resistance.

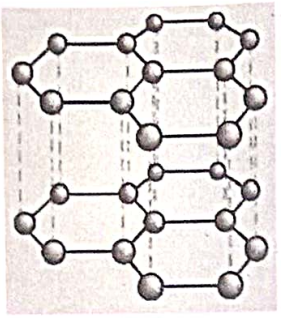
SECTION - III

12. A)



(OR)

B)



13. Uses of Washing soda. : (Na_2cO_3-$10H_2O$)

i) Washing soda is used in glass, soap and paper industries.

ii) It is used in the manufacturing of sodium compound such as borax.

iii) Sodium carbonate can be used as a cleaning agent for domesitc purpose.

iv) It is used for removing permanent hardness of water.

Uses of Baking Soda : ($NaHCO_3$)

i) Baking powder, a mixture of baking soda (sodium hydrogencarbonate) and a mild edible acid such as tartaric acid, when heated or mixed in water, the following reaction takes place. (From any acid) Carbon dioxide produced during the reaction can cause bread or cake to rise making them soft and spongy.

ii) Sodium hydrogencarbonate is also an ingredient in antrcids, being alkaline, it neutralises excess acid in the stomach and provides relief.

iii) it is also used in soda-acid fire extinguishers.

14.i) By refraction.

ii) To perceive the correct orientation.

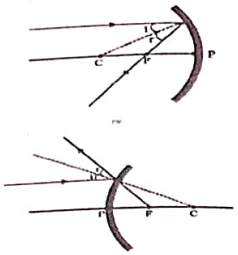
iii) Binocular vision.

iv) inverted but looks erect.

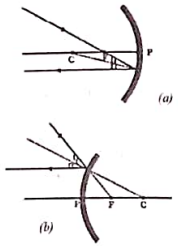
SECTION - IV

15. A) The position of the image formed by spherical mirrors can be found by considering any two of the following rays of light coming from object.

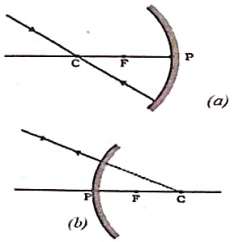
i) A ray parallel to the principal axiz, after reflection, pass through the principal focus in the case of concave mirror and appears to come from focus in the case of convex mirror.



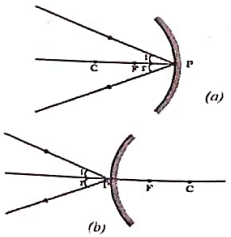
ii) A raypassing through the principal focus of a concave mirror or a ray directed towards the principal focus of a convex mirror, after reflection will become parallel to the principal axis.



iii) A ray passing through the centre of curvature of a concave mirror or directed in the direction of centre of curvature of a convex mirror is reflected back along the same path after reflection.



iv) A ray incident obliquely to the principal axis, towards the pole on the concave mirror or a convex mirror, is reflected obliquely following the laws of reflection i.e. with the pricipal axis.



(OR)

15. B) 1. Inside the solenoid, the magnetic, field lines are in the form of parallel straight ilnes.

2. This indicates that the magnetic field is uniform throughout the length of the solenoid.

3. The field inside has constant magnitude along the axis.

4. At one end of solenoid the field lines emerge,making it a magnetic north pole.

5. At the other end field lines merge, creating a south pole.

6. Hence the pattern is similar to the magnetic field around a bar magnet.

7. One end of solenoid behaves as a north pole, while the other behaves as a south pole.

8. The field outside the solenodi is weak.

9. A strong magnetic field produced inside the solenoid can be used to magnetise iron pieces.

10. Solenoids are used in electromagnets, doorbells, relays, valves, actutors, etc.

16. A) 1) **Activity series :** The arrangement of metals in decreasing order of their reactivity is called activity series of metals.

2) The activity series of metals is :

3) The method used fo a particular metal fof the reduction of its ore to the metal depends mainly on the position of the metal in the activity series.

i) Electrolysis is the method used fo rextractionof metals at the top of the activity seried (Hghly reactive metals.

ii) For the extraction of metals in the middle of the activity series, different reducting methods like roasting, auto reduction and thermit process etc., are used (moderatelyl reactive metals)

iii) For the extraction of metals at the bottom of the activity series, reductin by 'heating' and ' displacement from their aqua soluction', methods are used (Low reactive metals)

(OR)

16. B) i) Soap and detergent are not the same type of salts.

ii) Soap is typically made of sodiumof potassium salts of long-chain carboxylic acids, whereas detergents are generally sodium salts of sulphonic acids or ammonium salts with various ions like chlorides or bromides.

iii) The main difference lies in their composition and properties.

iv) Soap molecules have a hydorphilic end (ionic) and a hydrophobic end (hydrocardon tail), making them ideal for removing oil and dirt from surfaces.

v) Detergents, on the other hand, have long hydrocarbon chains that do not form insoluble precipitates in hard water, making them more effective than soap in such conditions.

vi) Both soap and detergents act as cleansing agents and hve the ability to form micelles to remove dirt by emulsification water.

vii) Soap is used for making shampoos and cleaning products, while detergents are commonly used in laundry detergents.

viii) Soap can be prepared by the saponification reactinof an acid and an ckohol, While detergents are versatile compounds manufactured for specific cleaning purposes.

ix) Soap is biodegradable and tends to be gentler on the environment compared to some synthetic detergents that may contain harsher chemicals.

x) In summary, while both soap and detergent serve as cleaning agents, they have different chemical, compositions and properties that make them suitable for specific cleaning taks.

17. A)

Aim : To Find the relationship between the potential difference across a conductor and the current throght it.

Materials Requried : Iron nails, nichrome wire, an ammeter, voltmeter, batteries, four 1.5V cells and connecting wires.

Procedure :

i) Set up the circuit as shown in the figure with only one cell as the source in the circuit.

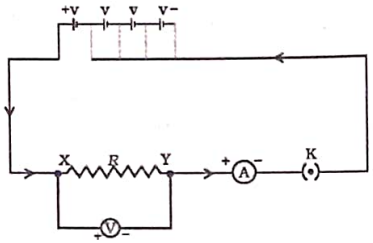
ii) Note down the reading of the voltmeter for potential Difference across the nichrome wire XY in the circuit.

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.

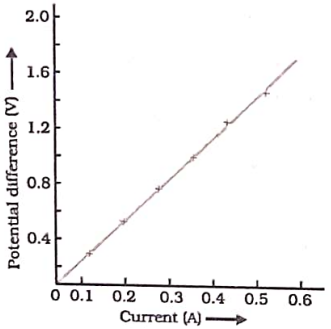
v) Calculate V/I for each part of potential difference V and current I.

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

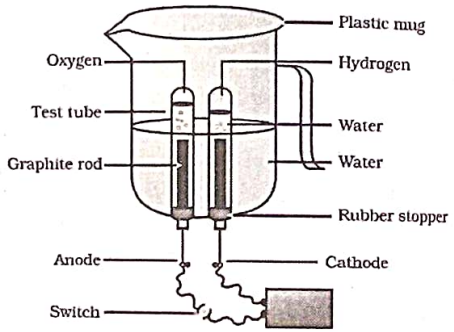
vii) Switch on the current and leave the apparatus undisturebed for some time.

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.....

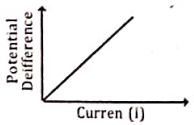
a) sulphur b)graphite c)PVC d)all can be used.

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?