MODEL PAPER -I
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. .....is oxidised in $CuO+H_2 \rightarrow Cu+H_2O$
2. Dry ammonia gas has no action on litmus paper but a solution of ammonia in water turns red litmus paper to blue. Why ?
3.

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

Which Solution is neutral>

4. The radius of curvature of a mirror is 20 cm. What is its focal length ?
5. Write the formula of slaked lime ?
6. What is the use of an electric fuse ?
7. Draw the shape of V-I graph of Non-Ohmic conductor.
8. Name the acid present in ant sting and give its chemical formula.

SECTION - 2 **3 × 2 = 6 M**

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

9. Which of the following oxides are amphoteric, acidic and basic oxides ?
   Na_2O, ZnO, Al_2O_3, CO_2 and H_2O
10. For driving a car, what type of mirror would you prefer to see traffic at your back and why ?
11. Mention the usual current rating of the fuse wire in the line to (i) lights and fans (ii) appliance of 2 kw or more power.

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 ray diagrams which show the formation of images by a convex lens when

i) The object is placed at infinity

ii) The object is placed beyond $2F_1$

B) Draw a neat and well labelled diagram for electrolytic refining of copper

13. A milkman adds a very small amount of baking soda to fresh milk.

a) Why does he shift the pH of the fresh milk from 6 to slightly alkaline ?

b) Why does this milk take a long time to set as curd?

14. Answer the questions below based on the table given.

Material	Silver	Iron	Drinking Water	Air
Specific resistone at 20°c	1.59×10^{-8}	1×10^{-7}	2×10^{-1}	1.3×10^{16}

i) In which material the electric current is more ?

ii) What is the SI unit of specific resistance ?

iii) Identify the insulator based on resistivity values ?

iv) ..... is a property that resists the flow of electrons in a conductor ?

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) When and where does a rainbow appear in the sky ?

(OR)

B) Show how would you join three resistors, each of resistance 9Ω, so that the equivalent resistance of the combination is (i) 13.5Ω (ii) 6Ω

16. A) An alkali is a important base used for the laboratory work. Name the base and state how it can be prepared from common salt What is this process called ?

(OR)

B) How can ethanol and ethanoic acid be differentiated on the basis of their physical and chemical properties ?

17. A) Describe an activity to prove that a magnetic field is produced around a current carrying conductor.

(OR)

B) Explain an activity where light is used for decomposition reaction.

ANSWERS

SECTION -I

1. H_2
2. Dry ammonia has no H^+ or OH^- ions, whereas ammonia in water gives OH^- ions which turn red litmus to blue.
3. D is neutral solution
4. $f = \frac{R}{2} = \frac{20}{2} = 10cm$
5. $Ca(OH)_2$
6. Electric fuse protects circuits and appliances by stopping the flow of any unduly high electric current.
7. 

V-I graph for Non-Ohmic conductors will be non-linear.
8. The acid present in ant sting is formic acid, with the chemical formula HCOOH.

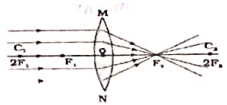
SECTION - II

9. Amphoteric oxides : Al_2O_3, ZnO
   Acidic oxide : CO_2
   Basic oxide : Na_2O
   H2O is a neutral oxide.
10. i) A convex mirror always forms an erect and diminished image of the object, behind the mirror.
    ii) A convex mirror has wider filed of view.
    Due to these reasons a convex mirror is preferred as a rear view mirror in vehicles.
11. i) A fuse of rating 5A is usually used for lights and fans.
    ii) A fuse of rating 15A is usually used for appliances of 2 kW or more power.

SECTION - III

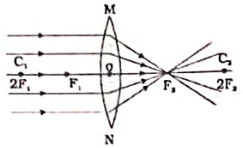
12. A) Object is placed at infinity :

i) The object is placed at infinity



(a)

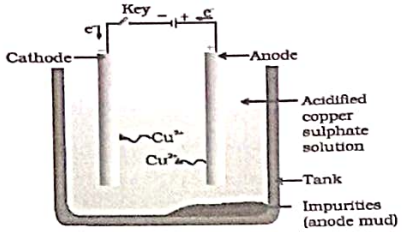
ii) The object is placed beyond $2F_1$



(a)

(OR)

12. B)



13. a) i) The chemical name of baking soda is sodium hydrogen carbonate ($NaHCO_3$) and its pH value is 8.1

ii) When a milk man adds a little baking soda to fresh milk, the pH of the fresh milk (6) shifts to '8' thus becoming alkaline.

iii) Thus the spoilage of milk can slow down.

b) i) For curdling milk, an acidic medium is required.

ii) When a small quantity of baking soda is added, the medium becomes slightly basic.

iii) This affects the activity of the naturally occurring lactic acid bacteria responsible for curd formation.

iv) This slows down the fermentation process, making it take a longer time for the milk to set as curd.

14. i) Silver ($1.59x10^{-8}$) ii) Ohm-metre

iii) Air iv) Resitivity

SECTION - IV

15. A) i) A rainbow is a natural spectrum that appears in the sky after it rains.

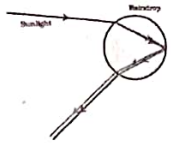
ii) It happens because sunlight gets split or dispersed by tiny water droplets in the air.

iii) Rainbows always form inthe direction opposite to the sun.

iv) The water droplets act like small prisms.

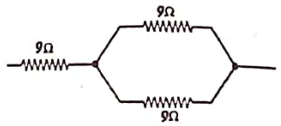
v) They refract and disperse the sunlight when it enters, then reflect it inside, and finally refract it again when it exits the droplet.

vi) Because of this bending and splitting of light, different colours are visible to us in the rainbow.



(OR)

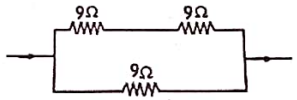
15. B) i) A parallel combination of two 9Ω resistors is equivalent to 4.5Ω. We can obtain 13.5Ω by coupling 4.5 and 9Ω in series. So, to obtain 13.5Ω is as shown in figure.



Equivalent resistance, $R = \frac{R_1R_2}{R_1+R_2} = \frac{81}{18} = 4.5\Omega$

Equivalent resistance, $R_{eq} = 4.5+9 = 13.5\Omega$

(ii) To obtain an equivalent resistance of we have to connect two resistors in series and then connect the third 9Ω resistor in parallel to the series combination as shown in the figure(b).



Equivalent resistance,

$$R_{eq} = R = \frac{R_1R_2}{R_1+R_2} = \frac{18\times9}{18+9} = \frac{162}{27} = 6\Omega$$

16.A) i) An important alkali, Commonly used for laboratory work is sodium hydroxide (NaOH)

ii) NaOH is prepared by the electrolysis of sodium chloride solution. This process is called chlor-alkali process.

$CH_3COOH+NaHCO_3 \rightarrow CH_3COONa+H_2O+CO_2$

(Ethanoic acid)

$C_2H_5OH+NaHCO_3 \rightarrow$ No reaction

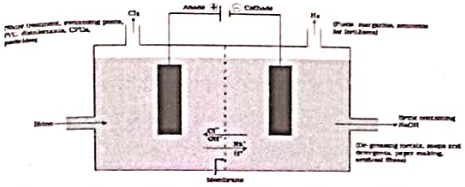
(Ethanol)

Electrolysis of sodium chloride solution : When electricity is passed through an aqueous solution of sodium chloride (brine) it decomposes to form sodium hydroxide. This process is called chlor-alkali process because of the products formed i.e. chlor for chlorine and alkali for Sodium hydroxide.

i) Chlorine gas is given off at the anode and hydrogen gas at the cathode.

ii) Sodium hydroxide solution is formed near the cathode.

iii) The products produced in this process are all useful.



16. B) Differnces based on physical properties :

i) Ethanoic acid smells pungent, while ethanol smells pleasant.

ii) Ethanoic acid has a highermelting point (290K) compared to ethanol (156K)

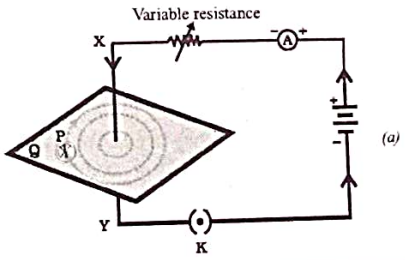
iii) Ethanoic acid can be found as a solid (glacial acetic acid), but ethanol is always a liquid.

Difference based on chemical properties :

i) When a small amount of NaHCO3 is added to ethanoic acid, it produces CO_2 gas with vigorous bubbling.

ii) However, this reaction does not occur with ethanol.

17. A) Aim : To prove that a magnetic field is produced around a currnt carrying conductor.
Materials Requried : Battery, plug key, ammeter, rheostat, card board, compass and iron filing.



(a)

Procedure :

i) Take a battery (12V), a variable resistance or rheostat, an ammeter (0-5A), a plug key, and a long straight thick copper wire.

ii) Insert the thick wire through the center, normal to the plane of rectangular card board. Take care that the cardboard is fixed and does not slide up and down.

iii) Connect the copper wire vertically between points X and Y, and a plug key.

iv) Sprinkle some filings uniformly on the cardboard.

v) Keep the variable of the rheostat at a fixed position and note the current through the ammeter.

vi) Close the key so that a current flows through the wire. Ensure that the copper wire placed between points X and Y remains vertically straight.

vii) Gently tap the cardboard a few times. Observe the pattern of the iron fillings. You would find that the iron filings align themselves showing a pattern of concentric circles around the copper wire.

Observation : Iron filings get arranged in concentric circles around the straight conductor.

Conclusion : a magnetic field is produced around a current-carrying conductor. The direction of the magnetic filed gets reversed when the direction of the current is reversed.

(OR)

B) **Aim :** To explain the photochemical decomposition of silver chloride.

Materials Required : Silver Chloride, China dish, sunlight.

Procedure :

i) Take about 2g of silver chloride in a china dish.

ii) Observe the colour of silver chloride.

iii) Place this china dish in sunlight for some time.

iv) Again observe the colour of silver chloride.

Observation : White silver chloride turns into grey in sunlight because silver metal is formed.

Conclusion : Silver chloride decomposes in the presence of sunlight to form silver metal and chlorine gas.

This reaction is photochemical decomposition reaction.