SCERT, AP

MODEL PAPER – 2 (2024-2025)

CLASS - 10

GENERAL SCIENCE - Paper – I (Physical Science)

Time: 2 Hours **(English Version)** **Maximum Marks: 50**

Instructions:

1. Question paper consists of 4 sections and 17 Questions.
2. Internal Choice is there only for Q.No.12 in Section –III and for all the Questions in Section –IV.
3. In the duration of 2 hours, 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 x 1 = 8**

Notes: 1. Answer **ALL** the questions.
2. Each question carries **1** mark.

1. Why, keeping food in air tight containers?

Ans: Oxidation of food can be slow down.

2. What is a neutralization reaction?

Ans: The reaction of an acid with a base to give a salt and water is known as a neutralization reaction.

3.

Substance	Blue litmus	Red litmus
X	Blue colour turns to red	Remains same
Y	Remains same	Remains same
Z	Remains same	Red colour turns to blue

Which is neutral?

Ans: Y

4. What type of oxides are formed when non-metals combine with oxygen?

Ans: Acidic oxides

5. Write any one use of ethanol/Alcohol.

Ans: It is used good solvent, medicines and tonics.

6. The changes in focal length of an eye lens is caused by the action of the

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

Ans: c) ciliary muscles.

7. What is the SI unit of electric energy?

Ans: Kilo Watt Hour (or) KWH

8. Name a device that helps to measure a potential difference across a conductor.

Ans: Voltmeter

SECTION - II **3 x 2 = 6**

Notes: 1. Answer **ALL** the questions.
2. Each question carries **2** marks.

9. Identify the alkanes, alkenes and alkynes

C_2H_6, C_3H_8, C_3H_6, C_2H_2 and CH_4

Ans: Alkanes - C_2H_6, C_3H_8, CH_4

Alkenes - C_3H_6

Alkynes - C_2H_2

10. A ray passing through the centre of curvature of a concave mirror, after reflection, is reflected back along the same path.Why?

Ans: The incident rays fall on the concave mirror along the normal to the reflecting surface.

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

Ans: Copper and Aluminium wires possess low resistivity and as such are generally used for electricity transmission.

SECTION - III 3 x 4 = 12

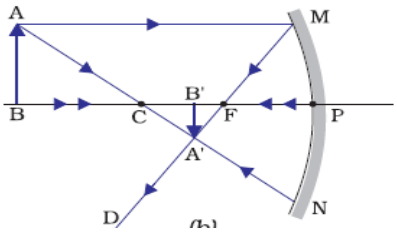
Notes: 1. Answer **ALL** the questions.
2. Each question carries **4** marks.

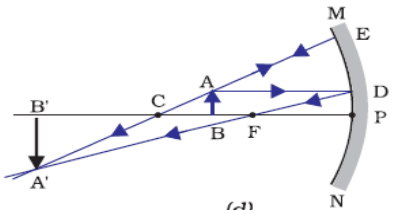
12.Draw any one of the following diagrams:

(A) Draw the ray diagrams of image formed when the object is placed infront of a concave mirror in the following positions.

(a) Beyond C **(b) Between C and F**

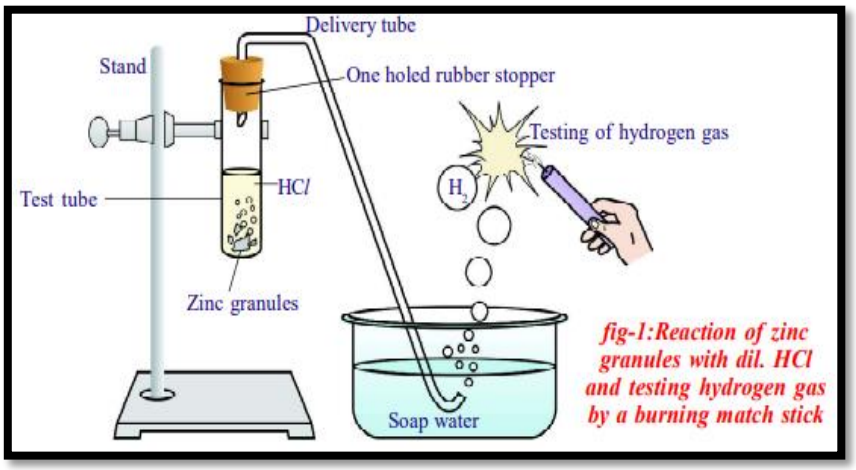
Ans:





(B) Draw a diagram of arrangement of apparatus for the reaction of acids with metals

Ans:



13. Give two important uses of Bleaching powder and Plaster of Paris?

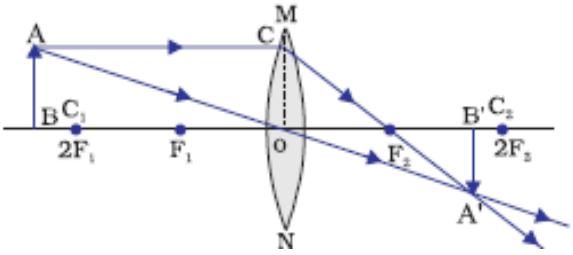
Ans: Uses of Bleaching powder:

i) for bleaching cotton and linen in the textile industry, for bleaching wood pulp in paper factories and for bleaching washed clothes in laundry;
ii) as an oxidising agent in many chemical industries; and
iii) to make drinking water free from germs. . (Write any two points)

Uses of Plaster of Paris:

i) Doctors use as plaster of Paris for supporting fractured bones in the right position.
ii) Plaster of Paris is used for making toys, materials for decoration and for making surfaces smooth.

14.



Observe the ray diagram and answer the following questions.

i) Which lens used in this ray diagram?
ii) Where is the position of the object?
iii) Where the position of the image?

iv) What is the nature of the image?

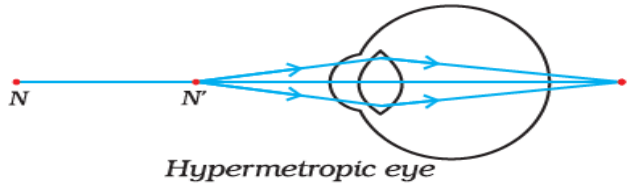
Ans: i) Convex lens
ii) Beyond $2F_1$
iii) Between F_2 and $2F_2$
iv) Real, Inverted and diminished

SECTION - IV 3 x 8 = 24

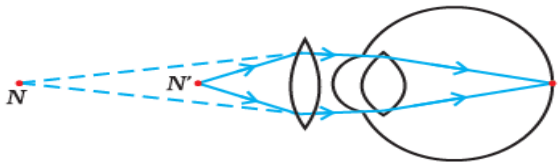
Notes: 1. Answer **ALL** the questions.
2. Each question carries **8** marks.
3. Each question has internal choice.

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

Ans: i) Hypermetropia is also known as farsightedness.
ii) A person with hypermetropia can see distant objects clearly but cannot see nearby objects distinctly.
iii) The near point, for the person, is farther away from the normal near point (25 cm). Such a person has to keep a reading material much beyond 25 cm from the eye for comfortable reading.
iv) This is because the light rays from a closeby object are focussed at a point behind the retina.
v) This defect arises either because i) the focal length of the eye lens is too long or ii) the eyeball has become too small.
vi) This defect can be corrected by using a convex lens of suitable power.
vii) A convex lens of suitable power will bring the image back on to the retina and thus the defect is corrected.



Hypermetropic eye



Correction for Hypermetropic eye

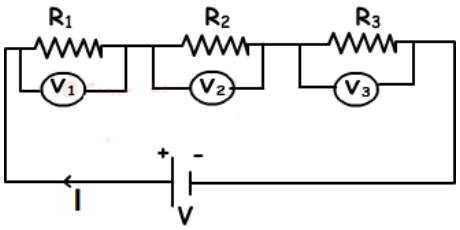
(OR)

Deduce the expression for the equivalent resistance of three resistors connected in series in an electric circuit.

Ans: In series connection of resistors there is only one path for the flow of current in the circuit. .Hence, the current in the circuit is equal to I

On applying Ohm's law to each resistor

$V_1 = IR_1$
$V_2 = IR_2$;
$V_3 = IR_3$



Let R be the equivalent resistance of the combination of resistors in series.

Also $V = IR_s$

$V = V_1 + V_2 + V_3$

$IR_s = IR_1 + IR_2 + IR_3$

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

$R_s = R_1 + R_2 + R_3$

The resistance of the equivalent resistance in series combination is equal to the sum of their individual resistance.

16. Balance the following chemical equations

i) $HNO_3 + Ca(OH)_2 \rightarrow Ca(NO_3)_2 + H_2O$
ii) $NaOH + H_2SO_4 \rightarrow Na_2SO_4 + H_2O$
iii) $NaCl + AgNO_3 \rightarrow AgCl + NaNO_3$
iv) $BaCl_2 + H_2SO_4 \rightarrow BaSO_4 + HCl$

Ans: (i) $2HNO_3 + Ca(OH)_2 \rightarrow Ca(NO_3)_2 + 2H_2O$

(ii) $2NaOH + H_2SO_4 \rightarrow Na_2SO_4 + 2H_2O$

(iii) $NaCl + AgNO_3 \rightarrow AgCl + NaNO_3$

(iv) $BaCl_2 + H_2SO_4 \rightarrow BaSO_4 + 2HCl$

(OR)

Explain the following
i) Homologous series ii) Substitution reaction

Ans: i) Homologous series

A series of compounds in which the same functional group substitutes for hydrogen in a carbon chain is called a homologous series.

A series in which every succeeding compound differs from the previous one by $–CH_2$.

Example: CH_4, C_2H_6, …. is the alkane homologous series.

ii) Substitution reaction

One type of atom or a group of atoms takes the place of another is called a substitution reaction

Example: In the presence of sunlight, chlorine is added to hydrocarbons in a very fast reaction. Chlorine can replace the hydrogen atoms one by one. A number of products are usually formed with the higher homologues of alkanes.

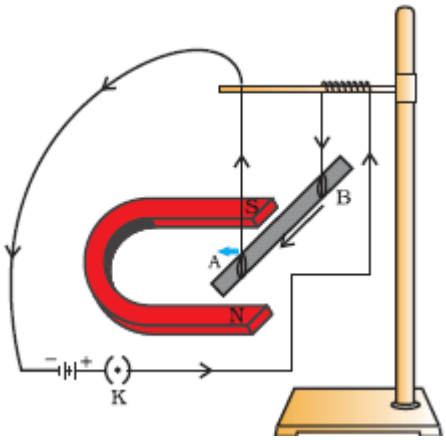
$CH_4 + Cl_2 \rightarrow CH_3Cl + HCl$ (In the presence of sunlight)

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

Ans:

Aim: To show that the force experienced by a current-carrying conductor placed in a magnetic field.

Required materials: Small aluminium rod, Strong horse-shoe magnet, Battery, Plug key, Vertical stand, Connecting wires.



Procedure: 1. Take a small aluminium rod AB (of about 5 cm). Using two connecting wires suspend it horizontally from a stand, as shown in Fig.
2. Place a strong horse-shoe magnet in such a way that the rod lies between the two poles with the magnetic field directed upwards. For this put the north pole of the magnet vertically below and south pole vertically above the aluminium rod.
3. Connect the aluminium rod in series with a battery, a key and a rheostat.
4. Now pass a current through the aluminium rod from end B to end A.
5. We observed that the rod is displaced towards the left and rod gets displaced.
6. Reverse the direction of current flowing through the rod and observe the direction of its

displacement. It is now towards the right.

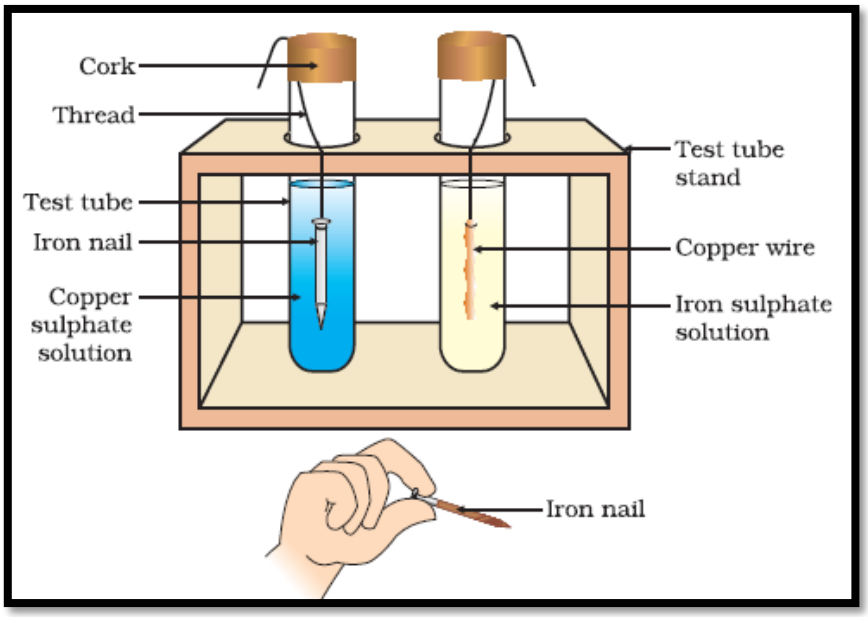
Observations: The aluminium rod gets displaced because a force is exerted on the current-carrying rod when it is placed in a magnetic field.

(OR)

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

Ans: Aim: Observe 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



Procedure: i) Take a clean wire of copper and an iron nail.

ii) Put the copper wire in a solution of iron sulphate and the iron nail in a solution of copper sulphate taken in test tubes figure.

iii) Record your observations after 20 minutes.

iv) The reaction occurs in the test in which iron nail is placed in a solution of copper sulphate.

v) The blue colour of copper sulpahte solution starts fading.

vi) This is a displacement reaction.

Observation: i) Reactive metals can displace less reactive metals from their compounds in solution.

ii) Iron metal displaces copper metal from its solution, iron is more reactive than copper