Time: 2 hours **Activity Sheet – August 2022** **Marks: 40**

Note: (i) All questions are compulsory.
(ii) Use of calculator is not allowed.
(iii) The numbers to the right of the questions indicate full marks.
(iv) In case of MCQs (Q. No. 1.(A)), only the first attempt will be evaluated and will be given credit.
(v) For each MCQ, the correct alternative - a, b, c, or d - with sub question number is to be written as an answer.
For e.g., i. a, ii. b, iii. c.
(vi) Scientifically correct, labelled diagrams should be drawn wherever necessary.

Q.1. (A) Write the correct alternative. **[5]**

i. The formula for escape velocity is _____ .
a. $\sqrt{\frac{2M}{R}}$ b. $\sqrt{\frac{2GM}{R}}$ c. $\sqrt{\frac{GM}{R^2}}$ d. $\sqrt{\frac{GMm}{R^2}}$

ii. To prevent rusting, a layer of _____ metal is applied on iron sheets.
a. potassium b. sodium c. magnesium d. zinc

iii. Carbonate ores are strongly heated in a limited supply of air to transform them into oxides, this process is called _____ .
a. leaching b. calcination c. roasting d. tinning

iv. For a particular value of *i*, the value of *r* becomes equal to 90°. This value of *i* is called _____ .
a. critical angle b. angle of deviation
c. angle of refraction d. angle of emergence

v. The _____ controls the amount of light entering the eye.
a. iris b. pupil c. cornea d. retina

(B) Answer the following. **[5]**

i. **Match the correct pair.**

Column A		Column B
a. Electric current	1	Ohm
	2	Ampere
	3	Volt

ii. **What is the height of Low Earth Orbit Satellite above the Earth's surface?**

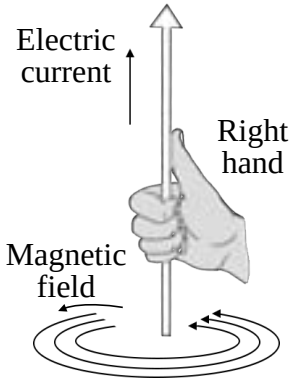
iii. **State true or false.**

When the incident ray is parallel to the principal axis, the refracted ray does not pass through the principal focus.

iv. **Find the odd man out.**

Methane, Ethene, Propane, Butane

v. **Identify the law from the given figure.**



Q.2. (A) Give scientific reasons. (Any two) **[4]**

i. Generally most of the carbon compounds are bad conductors of electricity.

ii. A magnetic needle shows decreasing deviation of its angle as distance from a current carrying conductor is increased.

iii. We see the sun even before it emerges above the horizon.

(B) Answer the following questions. (Any three) **[6]**

i. How much heat energy is necessary to raise the temperature of 10 kg of water from 30°C to 100°C?
(Specific heat capacity of water (C) = 1 kcal/kg°C).

ii. Will the value of '*g*' be the same everywhere on the surface of the earth? Justify your answer.

iii. Identify the exothermic and endothermic reaction.

a. $HC1 + NaOH \longrightarrow NaC1 + H_2O + heat$

b. $2KC1O_3(s) \xrightarrow{\Delta} 2KC1(s) + 3O_2\uparrow$

c. $CaO + H_2O \longrightarrow Ca(OH)_2 + heat$

d. $CaCO_3(s) \xrightarrow{\Delta} CaO(s) + CO_2\uparrow$

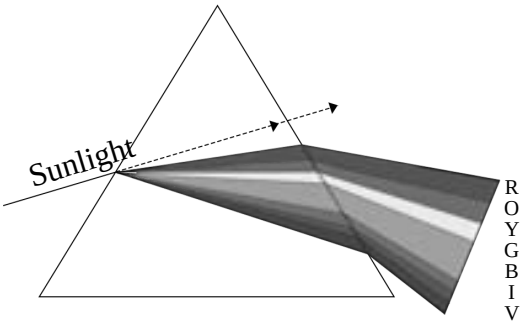
iv. Give one function of each of the following satellites.

a. Communication satellite b. Earth observation satellite

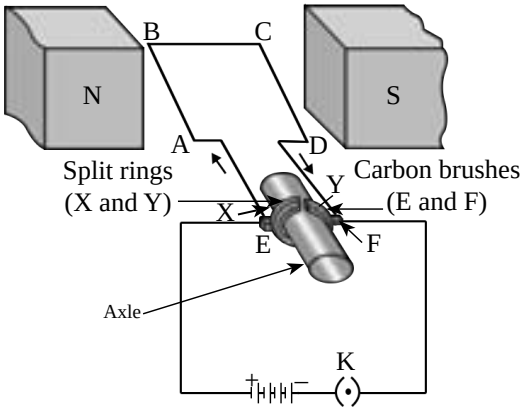
v. State any two uses of ethanol.

Q.3. Answer the following. (Any five) **[15]**

i. Identify the phenomenon shown in the figure below. State and explain it.



ii. Observe the following diagram and answer the questions given below.



a. Identify the device shown in the figure.

b. On which rule is the working of the above device based?

c. Give any two uses of this device.

iii. a. Atomic number of nitrogen is 7. How many electrons are present in the valence shell of nitrogen?

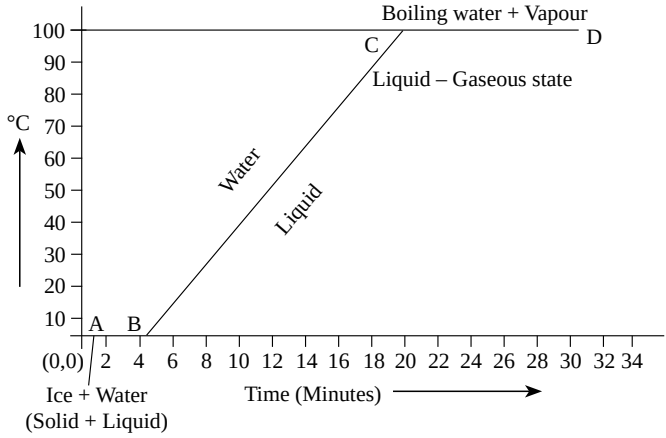
b. Molecular formula of nitrogen is N_2. Draw electron-dot structure and line structure of a nitrogen molecule.

iv. The mass and weight of an object on Earth are 5 kg and 49 N respectively. What will their values be on the Moon? Assume that the acceleration due to gravity on the Moon is 1/6th of that on Earth.

v. To which group does the halogen family belong? Write any four halogens.

vi. What is Redox reaction? Explain with the help of a balanced chemical equation.

vii. Explain the following Temperature vs Time graph.



viii. An element has its electronic configuration as 2, 8, 2. Answer the following questions.

a. What is atomic number of this element?

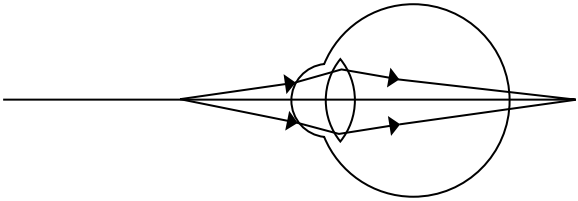
b. What is the group of this element?

c. To which period does this element belong?

Q.4. Answer any one of the following questions. [5]

i. a. What is the minimum distance of distinct vision for a normal human eye?

b. Identify the defect of vision shown in the figure.



c. The focal length of a convex lens is 25 cm. What is its power?

d. Define Power of lens.

ii. State the general properties of ionic compounds.

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