Time: 2 hours **Activity Sheet – July 2024** **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) Choose the correct alternative. **[5]**

i. In modern periodic table, the non-metals are found in _____.
a. *s*-block b. *p*-block c. *d*-block d. *f*-block

ii. $CuSO_4(aq) + Zn(s) \longrightarrow ZnSO_4(aq) + Cu(s)$.
This is _____ type of chemical reaction.
a. displacement b. double displacement
c. combination d. decomposition

iii. The unit of electric power is _____.
a. Joule b. Volt c. Watt d. Coulomb

iv. We can see the sun even when it is a little below the horizon because of _____.
a. reflection of light b. refraction of light
c. dispersion of light d. absorption of light

v. _____ is one of the combustible components of L.P.G.
a. Ethane b. Propane c. Methane d. Ethene

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

i. Write the correlation.
Brass : Copper and Zinc :: Bronze : .....

ii. Write True or False.
Benzene is an aromatic compound.

iii. Find the odd one out.
Myopia, Presbyopia, Hypermetropia, Retina

iv. What is the angle of refraction when the angle of incidence is 0°?

v. Name *two* appliances which work on the principle of magnetic effect of electric current.

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

i. Sodium is always kept in kerosene.

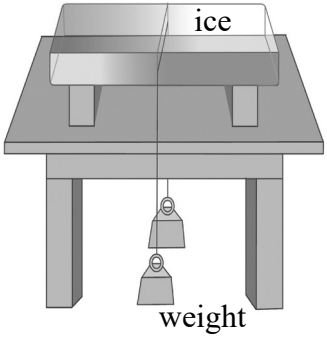
ii. A simple microscope is used for watch repairs.

iii. It is necessary to manage space debris.

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

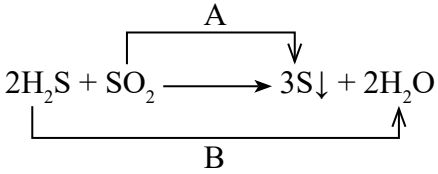
i. The absolute refractive index of water is 1.33. What is the velocity of light in water?
(Velocity of light in vacuum = 3×10^8 m/s)

ii. Observe the figure and answer the questions given below.



a. Name the phenomenon shown in the figure.

b. Define the above phenomenon.

iii. 

a. Identify the above chemical reaction.

b. Name the type of reaction in A and B.

iv. Rearrange the columns 2 and 3 so as to match with the column 1.

Column 1	Column 2	Column 3
(1) Triad	a. Concentrated mass and +ve charge	i. Thomson
(2) Octave	b. Average of the atomic masses of first and third element	ii. Newlands
	c. Properties of the eighth element are similar to first	iii. Dobereiner

v. Define the following terms.

a. Escape velocity

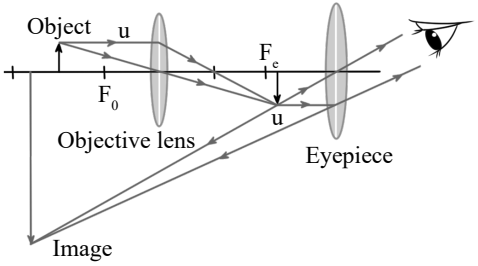
b. Free fall

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

i. What information will you get from the given reaction?

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

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



a. Identify the instrument shown in the diagram.

b. What is the combined effect of two lenses?

c. Write the use of the above instrument.

iii. Read the following paragraph and answer the questions given below.

Rainbow is a beautiful natural phenomenon. It is the combined effect of dispersion, refraction and total internal reflection of light. It can be seen mainly after rainfall. Small droplets of water act as small prisms. When light rays from the sun

enter these droplets it gets refracted and dispersed. Then there is internal reflection and after that once again the light gets refracted while coming out of the droplet. All these three processes together produce the rainbow.

a. Which *three* major phenomena are responsible for rainbow formation?

b. How does refraction take place?

c. Draw a diagrammatic representation of rainbow production.

iv. Observe the elements of second period of the modern periodic table given below, and answer the following questions.

3	4	5	6	7	8	9	10
Li	Be	B	C	N	O	F	Ne
Lithium	Beryllium	Boron	Carbon	Nitrogen	Oxygen	Fluorine	Neon
6.941	9.012	10.811	12.011	14.007	15.999	18.998	20.180

a. Name the elements in which both the shells are completely filled with electrons.

b. Name the element which has same number of electrons in both the shells.

c. Which is the most electropositive element in this period?

v. Explain on which factors the value of acceleration due to gravity 'g' depends.

vi. Explain the following terms.

a. Metallurgy

b. Ores

c. Gangue

vii. Give the names of the following satellite series developed by India.

a. Satellite series actively working in the field of telecommunication, television, and meteorological services

b. Satellite series specially working in the field of education

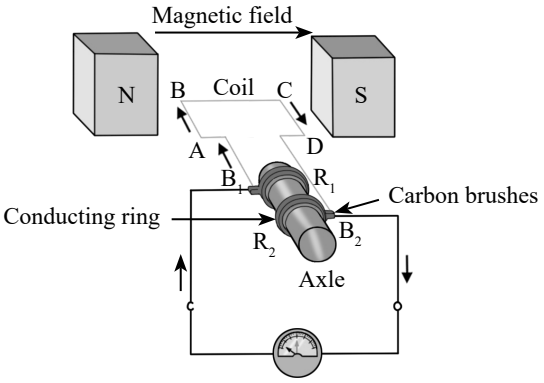
c. Satellite series to exactly locate position of any place on earth's surface

viii. a. What is meant by anomalous behaviour of water?

b. Explain the role of anomalous behaviour of water in preserving aquatic life in cold climate.

Q.4. Answer the following questions. (Any one) **[5]**

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



a. Identify the above diagram. [1]

b. Write the principle on which the above appliance works. [1]

c. Write the working of the above appliance. [2]

d. Write the use of the above appliance. [1]

ii. Read the following paragraph and answer the questions given below.

Carbon compounds contain many elements. The element hydrogen is present to a smaller or larger extent in majority of carbon compounds. The compounds which contain carbon and hydrogen as the only two elements are called hydrocarbons. Hydrocarbons are the simplest and the fundamental organic compounds. The smallest hydrocarbon is methane (CH_4), formed by combination of one carbon atom and four hydrogen atoms. We have already seen the structure of methane. Ethane is one more hydrocarbon. Its molecular formula is C_2H_6.

The carbon compounds having a double bond or triple bond between two carbon atoms are called unsaturated compounds. Ethene and ethyne are unsaturated hydrocarbons. The unsaturated hydrocarbons containing a carbon-carbon double bond are called 'Alkenes'. The unsaturated hydrocarbons whose structures contain a carbon-carbon triple bond are

called 'Alkynes'. Generally the unsaturated compounds are more reactive than the saturated compounds.

a. What is meant by hydrocarbon?

b. Name the smallest hydrocarbon.

c. Define unsaturated compound.

d. Differentiate between Alkene and Alkyne.

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