



BOARD ACTIVITY SHEET: July 2023

Science and Technology Part - 1

Time: 2 Hours

Max. Marks: 40

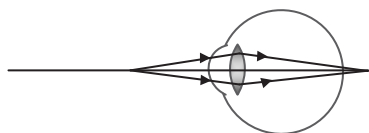
- Note:**
- All questions are compulsory.
 - Use of a calculator is not allowed.
 - The numbers to the right of the questions indicate full marks.
 - In case of MCQs (Q. No. 1(A)) only the first attempt will be evaluated and will be given credit.
 - For each MCQ, the correct alternative (A), (B), (C)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

Q.1. (A) Choose the correct alternative and write the correct option:**[5]**

- _____ has the highest refractive index.
(A) Air (B) Water
(C) Glass (D) Diamond
- The left hand side of a chemical reaction represents _____.
(A) Product (B) Reactants
(C) Catalyst (D) Indicator
- In _____ block of the modern periodic table non-metals are found.
(A) s-block (B) d-block
(C) p-block (D) f-block
- The chemical reaction in which two or more products are formed from a single reactant is called _____ reaction.
(A) Decomposition (B) Combination
(C) Displacement (D) Double displacement
- If the refractive index of glass with respect to air is $\frac{3}{2}$, the refractive index of air with respect to glass is _____.
(A) $\frac{1}{2}$ (B) 3
(C) $\frac{1}{3}$ (D) $\frac{2}{3}$

(B) Attempt the following questions:**[5]**

- State whether the given statement is true or false:
Rancidity is oxidation process.
- Find the odd man out:
Camera, Telescope, Peephole in door, Microscope
- Find the co-relation:
Resistance : Ohm :: Potential difference : _____
- Write the defect of eye from the given figure:



- Give the unit of intensity of magnetic field.



Q.2. (A) Give scientific reasons (any two):

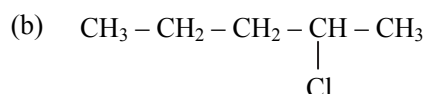
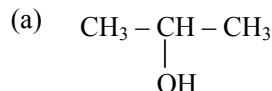
[4]

- Tungsten metal is used to make solenoid type coil in an electric bulb.
- Simple microscope is used for watch repairs.
- Metallic character goes on decreasing while going from left to right in a period.

(B) Answer any three of the following questions:

[6]

- Write the IUPAC names of the following structural formulae:



- An iron ball of mass 5 kg is released from a height of 125 m and falls freely to the ground. Assuming that the value of g is 10 m/s^2 , calculate time taken by the ball to reach the ground.
- What is meant by artificial satellite? Name the first satellite launched by Russia.
- Draw the image formed by convex lens, if object is placed at $2F_1$.
- Why does the apparent position of stars keep changing a bit?

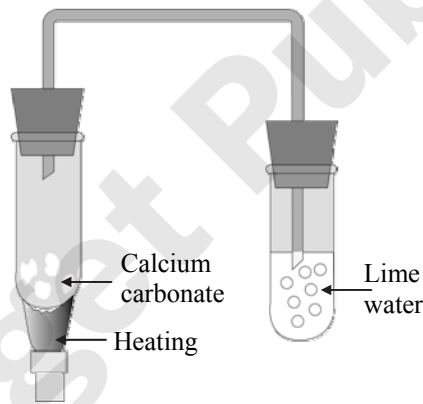
Q.3. Answer any five of the following questions:

[15]

- Identify the process given below and accordingly draw neat labelled diagram:

A molten mixture of alumina (melting point $> 2000^\circ\text{C}$) is done in a steel tank. The tank has a graphite lining on the inner side. The lining does the work of cathode. A set of graphite rods dipped in the molten electrolyte works as anode. Cryolite (Na_3AlF_6) and fluorspar (CaF_2) are added in the mixture to lower its melting point upto 1000°C .

- With reference to the given diagram answer the following questions:



- Give type of chemical reaction.
- Give the names of reactants and products.
- Write down the balanced chemical equation.

- What is Electrical Power? Derive the unit of electric power from the given equations:

$$P = V \times \square$$

$$P = \square \times \text{ampere}$$

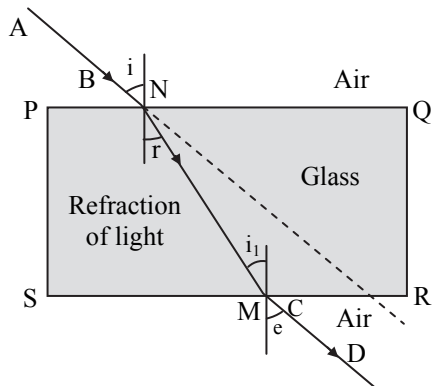
$$= 1 \text{ volt} \times 1 \square = \frac{1\text{J}}{1\text{C}} \times \frac{1\text{C}}{1\text{S}}$$

$$\therefore P = \frac{1\text{J}}{\square} = \text{W (Watt)}.$$

- Explain the term anodization with example. Give *one* use of it.
- State Kepler's *three* laws of motion.



- vi. The electronic configuration of an element X is 2, 8, 8, 2.
- What is the atomic number of the element X?
 - To which group does this element belong?
 - In which period does this element lie?
- vii. What is the contribution of India in space technology?
- viii. Observe the given diagram and answer the following questions:

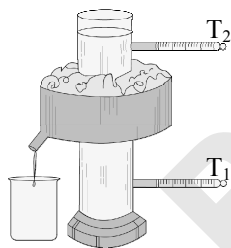


- What is refraction of light?
- Name the emergent ray.
- Which two angles are equal?

Q.4. Attempt any *one* of the following questions:

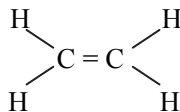
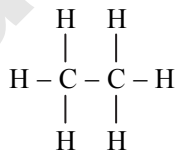
[5]

- i. Observe the given diagram and answer the following questions:



- What is the name of the given apparatus?
 - Which phenomenon is studied with the help of this apparatus?
 - What are the final temperatures in thermometers T_1 and T_2 ?
 - At what temperature the density of water is maximum?
 - Give *one* example of the above phenomenon in nature.
- ii. Observe and write the answers to the questions given below:

(I) (II)



- Write the names of compound I and II.
- Draw electron-dot structure for I and II.
- Which one of the above structures is saturated compound and unsaturated compound?