



BOARD ACTIVITY SHEET: July 2025

Science and Technology Part - 1

Time: 2 Hours**Max. Marks: 40**

- Note:** i. All questions are compulsory.
ii. Use of a 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. Scientifically correct, labelled diagrams should be drawn wherever necessary.
vi. Each new question should be started on the new page.

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

- i. Alkaline earth metals have valency 2. This means that their position in the modern periodic table is in _____.
(A) Group 2 (B) Group 16
(C) Period 2 (D) *d*-block
- ii. When the positive charge on an atom or an ion increases or the negative charge on them decreases it is called _____.
(A) Reduction (B) Oxidation
(C) Displacement (D) Decomposition
- iii. _____ device is used to produce electricity.
(A) Electric motor (B) Galvanometer
(C) Electric generator (D) Voltmeter
- iv. Light changes its direction when going from one transparent medium to another transparent medium. This is called the _____ of light.
(A) Reflection (B) Dispersion
(C) Refraction (D) Absorption
- v. Height of the High earth orbit from the surface of the earth is _____.
(A) = 20,000 km (B) = 27,000 km
(C) < 30,780 km (D) > 35,780 km

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

- i. Find the odd one out:
Fuse wire, bad conductor, rubber gloves, generator.
- ii. Complete the co-relation.
Red light wavelength close to : 700 nm :: Violet light wavelength close to : _____.
- iii. Match the pair:

Group 'A'		Group 'B'
Farsightedness	a.	Faraway object can be seen clearly
	b.	Nearby object can be seen clearly
	c.	Faraway object cannot be seen clearly

- iv. Write the electronic configuration of 'Aluminium'.
- v. State true or false:
The escape velocity on the moon is less than that on the earth.



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

[4]

- i. Sodium is always kept in kerosene.
- ii. We cannot clearly see an object kept at a distance less than 25 cm from the eye.
- iii. Tungsten metal is used to make a solenoid type coil in an electric bulb.

(B) Answer the following questions (any three):

[6]

- i. An object takes 5 seconds to reach the ground from a height of 5 m on a planet. What is the value of 'g' on the planet?
- ii. An element has its electronic configuration as 2, 8, 2. Now answer the following questions:
 - a. What is the atomic number of this element?
 - b. To which period does this element belong?
- iii. Complete the following reaction and give name of products:
 $\text{CuSO}_{4(\text{aq})} + \text{Fe}_{(\text{s})} \longrightarrow \text{_____} + \text{_____}$
- iv. Define specific heat of an object. Write its SI and CGS units.
- v. Draw the electron-dot structure of methane (CH_4) and Ethane (C_2H_6).

Q.3. Answer the following questions (any five):

[15]

- i. Explain the concept 'escape velocity' in detail.
- ii. Answer the following sub-questions regarding the modern periodic table:
 - a. Write modern periodic law.
 - b. Write the number of periods and groups.
 - c. What is the valency of halogens?
- iii. State whether the following reactions are endothermic or exothermic:
 - a. $\text{HCl} + \text{NaOH} \longrightarrow \text{NaCl} + \text{H}_2\text{O} + \text{Heat}$
 - b. $2\text{KClO}_{3(\text{s})} \xrightarrow{\Delta} 2\text{KCl}_{(\text{s})} + 3\text{O}_2 \uparrow$
 - c. $\text{CaO} + \text{H}_2\text{O} \longrightarrow \text{Ca(OH)}_2 + \text{Heat}$
- iv. Identify figure and write *one* use of it:
 - a.
 - b.



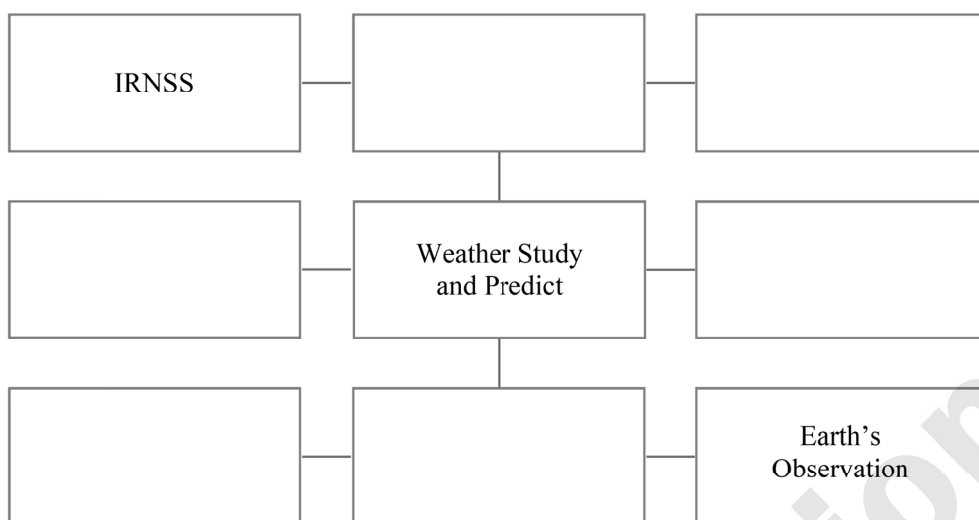
c.



- v. How much heat energy is necessary to raise the temperature of 5 kg of water from 20°C to 100°C ?
 $[c = 1 \text{ kcal/kg}^\circ\text{C}]$
- vi. Write the Cartesian sign convention for lenses.



vii. Complete the following chart:



viii. Give the chemical equations for the following reactions:

- Thermit reaction
- Burning of magnesium in air
- Iron nail/dust is dropped in aqueous solution of copper sulphate.

Q.4. Answer the following (any one):

[5]

- "A rainbow is the combined effect of the refraction, dispersion and total internal reflection of light." Prove this statement with the help of diagram and explain it.
- Complete the following table:

Sr. No.	Straight chain of carbon atoms	Molecular formula	Name
1.	C	CH ₄	_____
2.	C-C	_____	Ethane
3.	C-C-C	C ₃ H ₈	_____
4.	C-C-C-C	_____	Butane
5.	C-C-C-C-C	C ₅ H ₁₂	_____
6.	C-C-C-C-C-C	_____	Hexane
7.	C-C-C-C-C-C-C	_____	Heptane
8.	C-C-C-C-C-C-C-C	C ₈ H ₁₈	_____
9.	C-C-C-C-C-C-C-C-C	_____	Nonane
10.	C-C-C-C-C-C-C-C-C-C	_____	Decane