TickMark.Ai
Mumbai

Class: EM - CLASS 10 | **Subject:** Science and Technology - Part 1 | **Time:**2 hrs
Date: 17-11-2025 | **Paper:** Board Paper 1 (Solution) | **Marks:**40

Q1(A))
(1) 0°
(2) 5.0 D
(3) Graphite
(4) A generator
(5) 25,000 km

(B))
(1) True
(2) White
(3) Magnet
(4) Swayam Satellite
(5) 1) - c

Q2(A))
(1) i. Copper undergoes oxidation in air to form black copper oxide. This copper oxide reacts with carbon dioxide in air and gains a green coat of copper carbonate.
ii. Thus copper gets tarnished or corroded due to the formation of green copper carbonate.
iii. Lime juice or tamarind contains weak acid i.e citric acid and tartaric acid.
iv. When these tarnished vessels are rubbed with lime juice or tamarind, the weak acid present in them dissolves the green copper carbonate and makes it shiny again.
(2) i. Copper and aluminium wires are generally used for electricity transmission as they have low resistivity and they good conductors of electricity..
ii. Low resistivity decreases the resistance and hence increases the amount of current in the circuit.
iii. Also, the power loss in the low resistance transmission wire becomes less.
(3) i. Elements fall in same group with similar properties.
ii. So, all the element that have same number of valance electrons belongs to the same group.
iii. Thus, Elements belonging to the same group have the same valency.

(B))
(1) i. Periods: The horizontal rows are called periods. There are seven periods in the periodic table.
ii. Groups : Vertical Columns in the periodic table starting from top to bottom are called groups. There are 18 groups in modern periodic table.
(2) Mass:
i. Mass is the amount matter present in an object.
ii. Mass is measured in kilograms as SI unit.
iii. Mass of any object is universally constant and does not change.
iv. Mass is a primary quantity and cannot be formulated for measurement.
v. Mass is measured by a beam balance.

Weight:
i. Weight is the force on an object due to gravitational pull.
ii. Weight is measured in Newton as SI unit.

iii. Wight changes with the change in Gravitational acceleration.
iv. Weight is a secondary quantity and depends on mass and gravitational acceleration, given as W = mg.
v. Weight is measured by a spring balance.

(3)

$$C_{12}H_{22}O_{11} \xrightarrow{\text{heat}} 12C + 11H_2O$$

(4)

Type of Satellite	The names of Indian Satellite and launcher
(1) Navigational satellite	Satellite : Indian Regional Navigation Satellite System (IRNSS) Launcher : Polar Satellite Launch Vehicle (PSLV)
(2) Earth observation Satellite	Satellite : Indian Remote Sensing Satellite (IRS) Launcher : Polar Satellite Launch Vehicle

(5) (a) If the relative humidity is more than 60%, we feel that the air is humid.
(b) If the relative humidity is less than 60%, we feel that the air is dry.

Q3)

(1) An element has its electronic configuration as 2, 8, 1.
(a) The atomic number of this element i.e. sodium is 11.
(b) This element is sodium and it belongs to Group I of the periodic table. This group consists of Alkali metals.
(c) The period to which sodium belongs is Period 3.

(2) Given :
G = 6.67 × 10^{-11} Nm^2/kg^2,
mass of the moon = M = 7.34 × 10^{22} kg
radius of the moon = R = 1.74 × 10^6 m
Escape velocity = y = v_{eco} = $\sqrt{\frac{2GM}{R}}$

$$\sqrt{\frac{2\times6.67\times10^{-11\times7.34\times10^{22}}}{1.74\times10^6}}$$

= 2.37 km/s
Escape velocity on the moon 2.37 km/s

(3) (a) Iron has maximum specific heat capacity. In the given activity heat absorbed by iron sphere is transmitted more in the wax, hence sphere goes deepest into wax, while lead sphere absorbs less heat, resulting in less transmission of heat in the wax hence sphere goes the least depth in the wax.
(b) Lead has minimum specific heat capacity. Lead sphere absorbs less heat, resulting in less transmission of heat in the wax hence sphere goes the least depth in the wax.
(c) Specific heat of object: The amount of heat that is required to increase the temperature of unit mass of that particular substance through one degree is called specific heat of object.

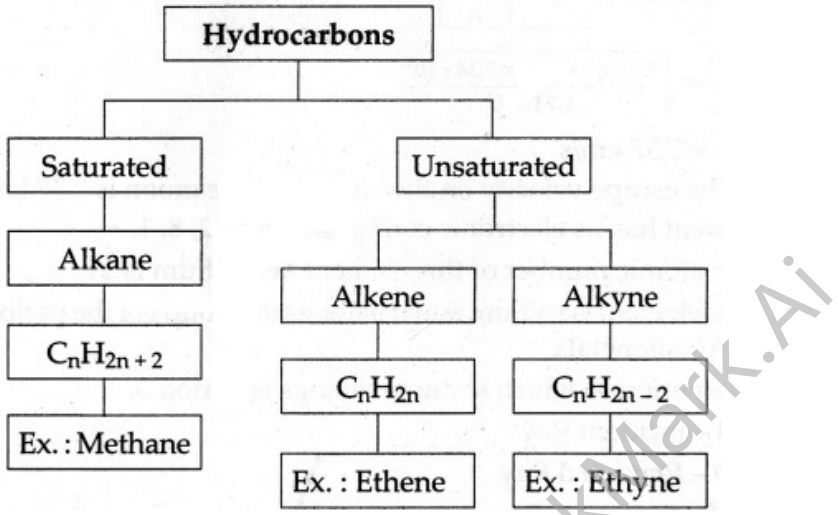
(4) Ray AB – Incident Ray
Ray CD – Refracted
Ray Ray GH – Emergent Ray

(5) (a) Transformation of ice into water — Physical change

(b) Ripening of fruit — Chemical change
(c) Milk turned into card — Chemical change
(d) Evaporation of water — Physical change
(e) Digestion of food in the stomach — Chemical change
(f) Iron Fillings get attracted towards the magnet— Physical change

(6) (a) **Fuse:** A fuse is nothing more than a short length of wire designed to melt and separate in the event of excessive current. Fuses are always connected in series with the component(s) to be protected from overcurrent, so that when the fuse blows (opens) it will open the entire circuit and stop current through the component(s).
(b) **MCB:** Miniature circuit breakers (MCB) switches are used in homes. When the current in the circuit suddenly increases, this switch opens and current stops.
(c) **DC Generator:** It is used to convert mechanical energy into electric energy. Here, mechanical energy is used to rotate the current carrying coil in a magnetic field, around an axle, thereby producing electricity.

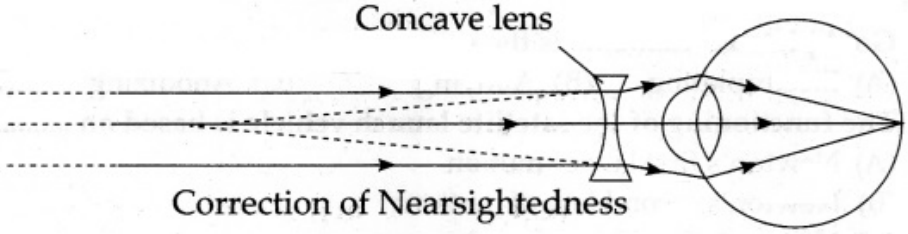
(7)



(8) (a) The electronic configuration of sodium is 2, 8, 1 and the electronic configuration of chlorine is 2, 8, 7. For stability sodium atom donates it's one electron to chlorine and the chlorine atom gains it, which causes the formation of the sodium chloride compounds. Since sodium chloride is formed by the transfer of electrons between the elements, therefore it is an ionic compound.
(b) Two properties of ionic compounds :
1. Ionic compounds have high melting as well as boiling points.
2. They are hard and brittle in nature.

Q4)

(1) (a) In the figure, Myopia or Nearsightedness defect of vision is represented.
(b) The reasons for this defect:
1. The curvature of the cornea and the eyelens increases. The muscles near the lens cannot relax so that the converging power of the lens remains large.
2. The eyeball elongates so that the distance between the lens and the retina increases.
(c) This defect can be corrected using spectacles with concave lens. This lens diverges the incident rays and these diverged rays can be converged by the lens in the eye to form image on the retina.
(d)



(2)

Common Name	Structural Formula	IUPAC Name
1. Ethylene	CH2 = CH2	**Ethene**
2. Acetylene	**CH = CH**	Ethyne
3. Acetic acid	CH3—COOH	**Ethanoic acid**
4. Methyl alcohol	**CH3 – OH**	Methanol
5. **Acetone**	CH3– CO – CH3	Propane-2-one

All the Best