EDUTECH ACADEMY
NURTURING THE FUTURE...
— Classes 5 to 10 —

SET A

N 714

Seat No. | | | | | | | |

2025 XII 27 1100 – N 714 – SCIENCE & TECHNOLOGY PART I (71)

(REVISED COURSE)

Time : 2 Hours **(Pages 6)** **Max. Marks : 40**

--- MODEL ANSWER ---

Q.1 (A) Choose the proper alternative and fill in the blanks: **5**

(1) Ans. (a) right hand side

(2) Ans. (d) James Prescot Joule

(3) Ans. (a) absolute refractive index

(4) Ans. (a) pupil

(5) Ans. (d) reactivity series of metals

(B) Attempt the following: **5**

(1) Find the odd one out: **1**

Ans. Melting of ice

(2) State 'True' or 'False', if 'False' correct it: **1**

Ans. True

(3) Write the correlated terms: **1**

Ans. Dobereiner

(4) Name the following: **1**

Ans. Glass prism

(5) Answer the following in one line: **1**

Ans. Ca_2CO_3

Q.2 (A) Give reasons:(Any Two) **4**

(1) Ans. Tungsten metal is used to make solenoid type coil in an electric bulb because:

1) Tungsten mental has high resistance and high melting point (nearly 3422°C).

2) Because of current, it gets heated at high temperature without melting and emits light.

(2) Ans. i. The cells present on the retina and responsible for colour vision are known as cone cells.

ii. These cells become active only under bright light and remain inactive under dark. Iii. Thus, one can sense only in bright light.

(3) Ans. i. Carbon is a non-metal having atomic number 6.

ii. The electronic configuration of carbon is (2, 4).

iii. There are four electrons present in the outermost shell of a carbon atom. So, its valency is 4. Hence, carbon is a tetravalent atom.

(B) Answer the following:(Any Three) **6**

(1) Ans. Metal 'A' is more reactive than metal 'B' because it has only one valence electron to lose and it will lose it readily.

Atomic number of metal 'A' is 11, hence it is Na.

$2Na + 2HCl \rightarrow 2NaCl\ (aq) + H_2\ (aq)$

(2) Ans. d. The magnetic lines of force are in concentric circles with the wire as the centre, in a plane perpendicular to the conductor.

(3) Ans. 1. Yes.

2. The air near the holi flames is a rarer medium than air above it.

2. Therefore, the refractive index of air goes on increasing as we go higher and higher and the direction of light rays coming from objects beyond the holi fire changes due to changing refractive index above the fire. Thus the objects appear to be moving.

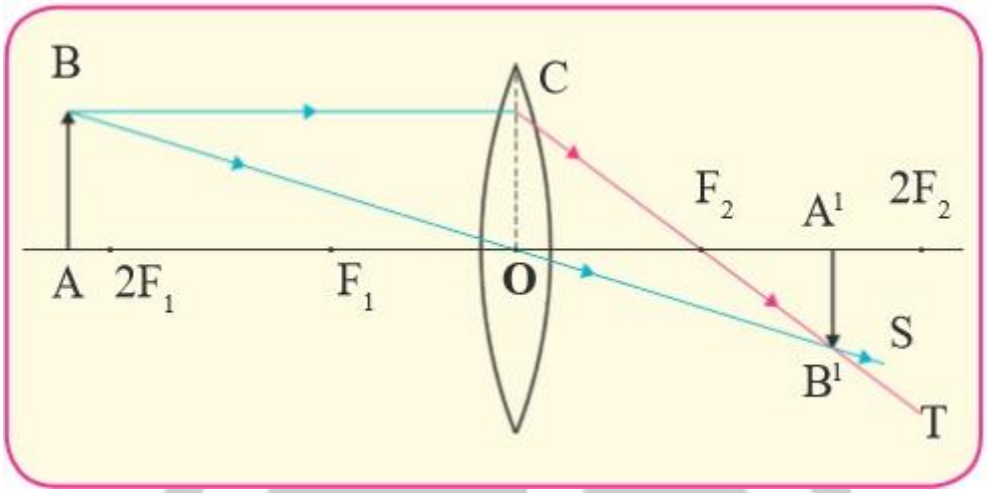
(4) Ans. (i) Addition reaction

(ii) Substitution reaction

(5) Ans. A Satellite Launch Vehicle (SLV) is a type of rocket designed to transport satellites into space, positioning them into specific orbits around the Earth. SLVs are crucial for Advertisements deploying satellites for various applications, including communication, navigation, and Earth observation.

Q.3 Answer the following:(Any Five) **15**

(1) Ans.



Size of the image: Smaller image than object will be formed.

Nature of the image: Real and inverted image will be formed.

(2) Ans. (i) When the current is downwards, the force experienced by the conductor will be outwards.

(ii) If the conductor experiences force inwards, then the direction of current would be inwards.

(iii) The rule is Fleming's Left Hand Rule.

(3) Ans. 1. Rainbow is seen mainly after a rainfall.

2. After raining, the atmosphere contains a large number of water droplets.

3. Small droplets of water acts as small prisms. When a light ray from the sun enters these droplets, it gets refracted and dispersed as light passes from air to water.

4.Then there is internal reflection inside the droplet, after that once again the light gets refracted before coming out of the droplet as

light passes from water to air. All these three processes together produce the rainbow.

5. The rainbow is seen when the sun is behind the observer and water droplets in the front.

(4) Ans. i. The products are silver chloride (AgCl) and sodium nitrate ($NaNO_3$).

Ii. Yes, the reaction follows the law of conservation of mass. There is no change in the mass before and after the reaction. The weight of the conical flask was the same. This shows that the total mass of the reactants equals the total mass of the products of the reaction.

(5) Ans.

IRNSS	Fix the location of any place on the earth's surface in terms of its very precise latitude and longitude.	Navigational satellite
INSAT	Weather study & predict	Weather satellite
IRS	Study of forests, deserts, oceans, polar ice on the earth's surface.	Earth's observation

(6) Ans. 1. When other substances or a liquid is heated upto a certain temperature, it expands and when cooled it contracts.

2. But water shows a special and exceptional behaviour.

3. If we heat water from 0°C upto 4°C, it contracts instead of expanding.

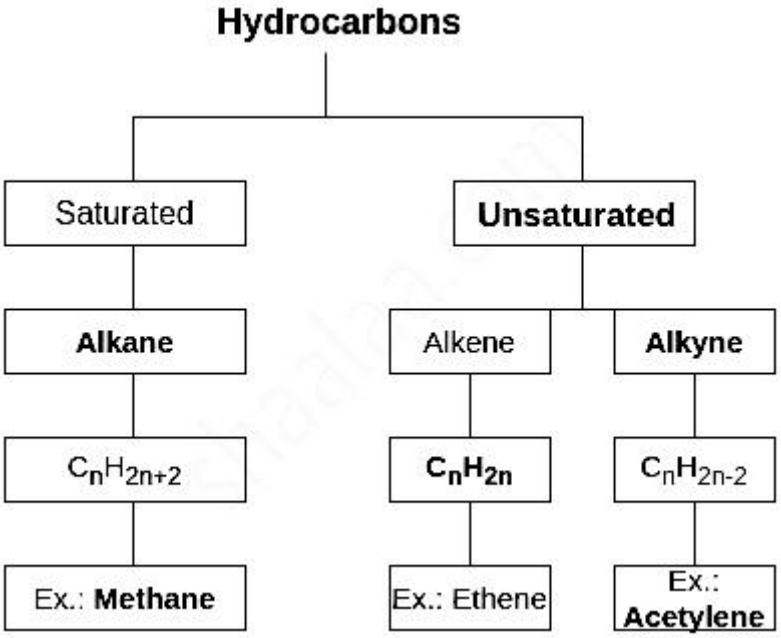
4. At 4°C its volume is minimum.

5. If the water is heated further, it expands and its volume increases.

6. This behaviour of water between its temperatures from 0°C to 4°C is called anomalous behaviour of water.

(7) Ans. a) 3rd period b) $_8O$ c) $_4Be$

(8) Ans.



Q.4 Answer the following:(Any One) 5

(1) Ans. 1. First group.

2. Li < Na < K < Rb < Cs

3. Yes

4. Biggest atom – Cs

Smallest atom – Li

5. While going down a group, atomic radius goes on increasing because number of shells increases but number of valence electrons remains the same. Hence, the attraction between the nucleus and the outermost shell decreases i.e. effective nuclear charge decreases. As a result, atomic radius increases and thus atomic size gradually increases.

(2) Ans. (i) $4Al(s) + 3O_2(l) \rightarrow 2Al_2O_3(s)$

Aluminum Oxygen Aluminum Oxide

(ii) $Fe(s) + CuSO4(aq) \rightarrow Cu(s) + FeSO4(aq)$

Iron Copper sulphate (Blue) Copper Ferrous sulphate (colourless)

(iii) $Fe_2O_3 + 2Al \rightarrow Al_2O_3 + 2Fe + heat$

Ferrous oxide Aluminium Alumina Iron

(iv) Reaction at Cathode: $Al^{+3} + 3e^{-} \rightarrow Al(l)$ (reduction)

Reaction at Anode: $2O^{2-} \rightarrow O_2 + 4e^-$ (oxidation)

$C + O_2 \rightarrow CO_2$

(v) $ZnO(s) + 2\ HCl\ (l) \rightarrow ZnCl_2(aq) + H_2O(l)$

Zinc oxide Zinc chloride

....All The Best....