

CCT Weekly- Science Practice

The Metal Aluminium

The metal Aluminium (Al) is widely used in industry. The usage of Al and its alloys ranks only second to ferrous (or iron) alloys. It is a strong metal whose density is one third of steel. It is also an excellent conductor of heat and electricity and resistive to corrosion. Pure aluminium exhibits good corrosion resistance due to the formation of a barrier oxide film that is bonded strongly to its surface. Hence, Al is known as Self-Protective metal.

Although Aluminium is the most abundant metal on the earth, its extraction requires huge amounts of electricity. In the *Hall-Heroult* process of Aluminium extraction, the electrolytic reduction of ore-aluminium oxide occurs after it is dissolved in molten cryolite (Na_3AlF_6).

Question 1

Bauxite (Aluminum ore) is mixed with cryolite during the extraction of aluminium due to which of the following reason(s)?

- (a) it reduces the melting point of the ore
- (b) decreases the electrical conductivity
- (c) increases its melting point of the ore
- (d) acts as a good solvent

Question 2

Why is Aluminium Paint applied to iron electric poles?

Question 3

People prefer Copper to Aluminium wiring for electrical supply at homes. Which might be the possible reason for the preference of Copper to Aluminium?

- (i) Aluminium wiring is expensive
 - (ii) Aluminium is better conductor of electricity than Copper
 - (iii) Copper transmits loads easily
 - (iv) Copper is more stable in electrical conductivity
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- (a) (i) & (ii)
 - (b) (i) & (iv)
 - (c) (ii) & (iv)
 - (d) (iii) & (iv)

Question 4

Shristi made these conclusions regarding Aluminium. Which ones would you agree/ disagree with?

	Statement	Agree	Disagree
i.	Due to affinity of Aluminium with oxygen, the extraction of the metal		

	is done by the process of electrolysis		
ii.	Instead of extraction of metals (Al), it is better to Reuse or Recover		
iii.	Awareness of utility of a material is the first step to reduce the wastage of the material followed by effective reuse & recycle		

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Answer Key:-

1. Correct options (a) and (d)
2. Aluminium paint is applied as a coating because it prevents corrosion of the iron poles due to the formation of a protective layer of Aluminium oxide.
3. Correct option (d)
4. (i) Agree
(ii) Agree
(iii) Agree

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