ಎಸ್ಎಸ್ಎಲ್ಸಿ–ಇಂಗ್ಲಿಷ್ ಮಾಧ್ಯಮ

SCIENCE
METALS AND NON-METALS

3. Aluminium corrodes in moist air but it is widely used for making cooking vessels and other cutlery. Explain.

Ans:- Aluminium does corrode with the formation of thin layer of aluminium oxide sticking to the surface. This layer of aluminium oxide is non-reactive and thus protects the metal underneath from further damage.

4. Write a note on different methods of preventing corrosion of metals.

Ans:- Different methods of preventing corrosion of metals are –

a) Barrier Protection – In this method, the surface is coated with some impermeable layer such as paint or oil greasing to prevent the access of damp air.

b) Electroplating – The surface is coated electrolytically with a metal which will not be oxidised easily. E.g., electroplating of nickel, chromium, tin etc., on articles to be protected.

c) Sacrificial Protection – In this case coated metal gets corroded in preference to the one which is protected. ***Eg:-*** iron sheets are coated with zinc (Galvanisation). Here even if the coating gets punctured, zinc will be preferentially oxidized.

d) Cathodic Protection – This is the most elegant method. The metal to be protected (say an iron tank) is made the cathode either by connecting to external power source or to a more active metal like magnesium.

5. How does alloying of iron help to improve its qualities?

Ans:- Pure iron is very soft and easily stretches. Its alloys with other metals and non–metals have very good qualities.

a) Steel – When iron has carbon (0.05 to 0.5%), it is called steel. It is hard and strong. It is used for making ships, vehicles and building.

b) Stainless steel– When steel is mixed with nickel and chromium, it is called stainless steel. It is hard and rust-proof. It is used for making utensils, equipments for feed and dairy industry.

6. Define the term 'alloy'. State any two advantages of making alloys.

Ans:- An alloy is a uniform mixture of one metal with one or more metals or non-metal.

Advantages of making alloys

i] An alloy has increased resistant to corrosion than the combining substances.

ii] An alloy has better tensile strength than the combining substances.

7. Tungsten is used almost exclusively for filaments of electric bulb. List two reasons.

Ans:- i] Tungsten has good resistant to corrosion.

ii] It glows when electricity is passed through it.

8. a] Write four important purposes of making alloy.

b] Write the constituents of following alloys:

i] Brass ii] Bronze

iii] Solder iv] Stainless Steel

Ans:- a] Alloys are generally made to serve the following purposes:

i] To modify chemical activity such as increased resistance to corrosion, e.g., stainless steel.

ii] To harden a metal, e.g., copper is mixed with gold to make ornament.

iii] To lower the melting point.

iv] To produce good castings.

b] i] Brass: Cu (60-90%) + Zn (4-10%)

ii] Bronze: Cu (88-96%) + Sn (12-4%)

iii] Solder: Pb (33%) + Sn (67%)

iv] Stainless Steel: Fe + Ni + Cr.

9. Give two reasons for aluminium alloys being preferred to copper for manufacturing cooking utensils.

Ans:- The two reasons for aluminium alloys for being preferred to copper for manufacturing cooking utensils are

i] Aluminium is unaffected by food acids.

ii] It is very light metals

10. Alloys are used in electrical heating devices rather than pure metals. Give one reason.

Ans:- On alloying metals get improved resistant to corrosion and thus their conductivity remains intact. Therefore, alloys instead of metals are used in electrical heating devices.

11. A metal is found in liquid state. It is widely used in instrument for measuring blood pressure. In what form does it occur in nature. How can we extract this metal from its ore?

Ans:- Mercury is the metal which is found in liquid state and is used in instruments for measuring blood pressure. It occurs in nature as sulphide in the form of Chinabar (HgS).

Mercury is obtained from purified Chinabar by roasting in the presence of air

$$HgS \xrightarrow[\text{heat}]{\text{air}} Hg + SO_2$$

FILL IN THE BLANKS:-

i] Calcium is …… reactive metal than sodium.

ii] An element having electronic configuration 2, 8, 1 is …… reactive than an element having electronic configuration 2, 8, 3.

iii] Magnesium liberates …… gas on reacting with water.

iv] Metal oxides are …… in nature.

v] Metals are located on the ……. side and …… of the periodic table.

vi] An earth material from which a metal can be extracted is called an ……..

vii] The rocky material found with ores is known as ……..

viii] The process in which lighter gangue particles are washed away in a stream of water while the heavier minerals stay behind is known as ……..

ix] Sulphide ores are concentrated by …….. process.

x] Aluminium is used as a reducing agent in …… process.

(Contd)