LEVEL-7 CHEMISTRY

UNIT 3: REACTION OF METALS

I) Fill in the blanks

1. The word metal comes from an Ancient Greek word meaning mine
2. Metals react with sulphur to form compound called sulphides.
3. Obtaining a metal from its ore is called the extraction of metal.
4. Compounds of metals found in nature are called minerals.
5. Gold and silver are found in the rocks as pure metals.
6. Metals like gold, silver and platinum are non reactive and do not corrode.
7. Recycling of scrap metals will help save valuable resources.
8. Electroplating used to coat cans that are used for storing food.

II) Name the following

1. Most reactive metal in the reactivity series
A) Potassium

2. Bauxite is an example of
A) Aluminium ore

3. The most abundant metal in the earth's crust
A) Aluminium

4. Give an example of iron ore
A) Haemalite

5 Aluminium is extracted by a method called
A) Electrolysis

6 The corrosion of iron
A) Rusting

7 Removing of oxygen from the iron by
A) Smelting

III) Match the following

A	B
1) Solder	a) making statues (4)
2) Stainless	b) aircraft manufactures (5)
3) Monel	c) making cutlery (2)
4) Bronge	d) ship building (3)
5) Duralumin.	e) joining copper pipes or metal Connections (1)

IV) Define

1. Ores: metals are found in the rocks as compounds called the ores.

2. Reactivity series: The reactivity series puts the metals in order with the metals that react most quickly at the top, less reactive metals at the bottom in a sort of league table.

3. Corrosion: Corrosion is the deterioration of metals by interaction with their environment such as water, air or acid.

4. Unreactive metals: Metals that do not react with air, water or any acid.

5. Ductile: A metal which can be drawn in to wires without breaking.

6. Malleable: A metal which can be easily shaped by hitting them with hammer.

V) Question and Answers:

1) Write four properties of metals:

Ans: The properties of metals are:

1. Metals are dense.
2. Metals are malleable and ductile.
3. They conduct heat and electricity.
4. They have high melting point.

Q 2) why is potassium at the top of the reactivity series? Put below mentioned metals in order of the reactivity
Mg, Cu, Ca, Ag, K, Fe, Na

A) Potassium is at the top of the reactor series because it reacts fastest with the water and reacts so violently with acid.

Metal	Reaction with O2	Reaction with H2O	Reaction with dil acid
Potassium (K)	Burns in air	Violent reaction	Extremely violent reaction

Sodium (N a)	"	"	"
Calcium (Ca)	"	"	"
Magnesium (Mg)	"	Reacts with steam	React
Iron (Fe)	"	"	"
Copper(Cu)	Oxide forms on surface	No reaction	No reaction
Silver (Ag)	NO REACTION	NO REACTION	NO REACTION

Q3) what do you mean by displacement reaction? Explain displacement reaction with an example.

A) The chemical reaction in which one element takes the position or place of another element in a compound is known as displacement reaction.

Ex: $Fe + CuSO_4 \longrightarrow Cu + FeSO_4$

Iron Copper sulphate Copper Ferrous sulphate

Iron is higher in the reactivity series than copper. If iron is put into the copper II sulphate solution, it displaces copper from the solution and forms iron II sulphate.

Q4) How would you protect the following from corrosion?

a) An iron fence
b) Steel bicycle handle bars
c) A cycle chain
d) Steel dustbins

A) a) By galvanising by immunising in molten zinc
b) Electroplated with chromium
c) By oiling regularly
d) Galwanised in zinc

Q5) Describe how aluminum is extracted from bauxite?

A) Extracting aluminum by electrolysis
a) impurities are removed from the aluminum ore bauxite leaving pure aluminium oxide or alumina
b) The alumina is molted
c) Then the electric current is passed through the hot alumina liquid, pure alumina is produced

Q6) Describe how iron is extracted from hematite.

A) Extracting iron by smelting
a) Iron oxide is first separated from impurities, in the iron ore haematite
b) Then put the iron oxide into a blast furnace along with carbon, mixture is strongly heated strongly
c) Oxygen is removed from the iron oxide leaving pure iron. This process is known as smelting

Q7) Explain how sacrificial protection works

A) Reactive metals such as magnesium ore coated on iron or steel to protect them from rusting. Magnesium is more reactive compound to iron and it reacts instead of iron and protects iron.

8) Why most of the metals have high density compared to non-metals?

Ans: Metals have higher density because the atoms are packed very close together.

9) Describe the arrangement of electrons in metals.

Ans: In metals, the electrons are forming a sea around the much large positive charged metal ions. When electric voltage is applied the free electrons conduct electricity as they are free to move.

10) What are the two stages in extracting a metal from its ore?

Ans: Two stages in extracting a metal are:

1. The metal compound is separated from the rock and other waste materials.
2. Metal has to be extracted from the metal compound based on its reactivity.

11) What is an alloy? How are alloys made?

Ans: An alloy is a mixture of two or more metals. Alloys are usually made by melting metals together, then allowing the molten mixture to cool and harden.