ICSE CLASS 8 CHEMISTRY

METALS AND NON-METALS

Minerals and ores

<table>
<tr><td>Naturally occurring substances of metals present in the earth's crust are called minerals.</td><td colspan="2">Minerals are non-renewable resources and it is important to conserve them</td></tr>
<tr><td>The methods used in the extraction of minerals from their ores profitably is called metallurgy</td><td rowspan="2">Recycling</td><td rowspan="2">saves energy; since mining and extraction requires huge amounts of energy

causes less pollution because less fossil fuels are burnt to provide energy for mining

ideal way to conserve non-renewable metal resources</td></tr>
<tr><td>Minerals which can be used to obtain the metal profitably are called ores.</td></tr>
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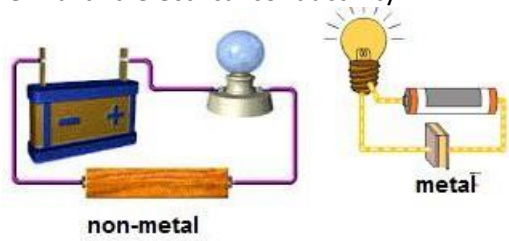
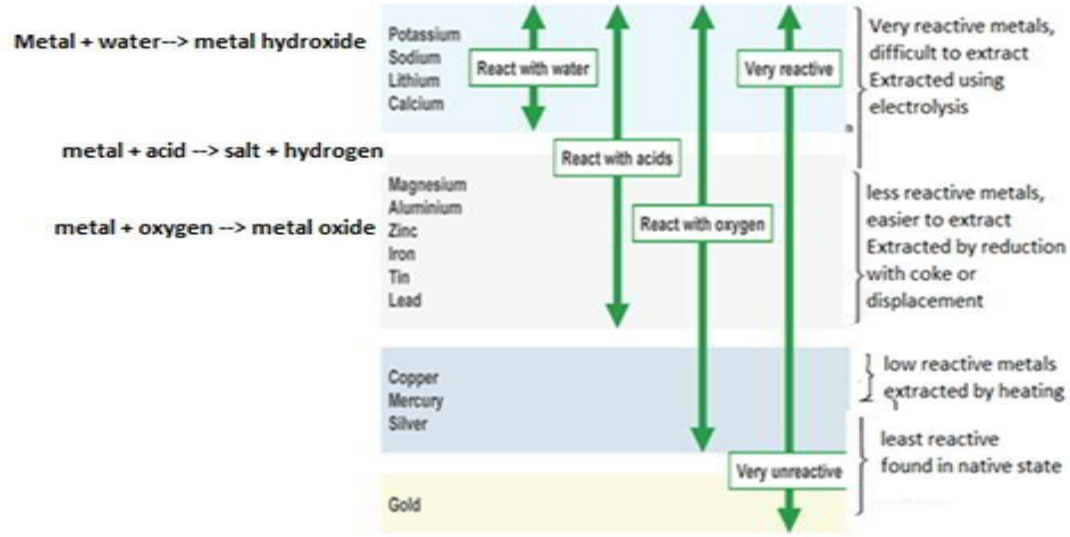
Physical properties of metals and non-metals

Property	Metals	Non-metals
State of matter	 Crystalline solids	 Either gases or solids except Bromine (liquid)
Metallic lustre	Shining, can be polished	Non-lustrous (except iodine), cannot be polished
Hardness	Hard solids (except sodium and potassium)	Soft and brittle (except diamond)
Malleability 	Malleable- can be hammered into sheets	Non-malleable

Ductility 	Ductile- can be drawn into wires	Non-ductile
Thermal and electrical conductivity 	Good conductors of heat and electricity (except lead which does not conduct heat)	Bad conductors (except graphite)
Sonority 	Make ringing sound (sonorous)	Non- sonorous

Metals	Non-metals
	Non-metals do not react with water React with concentrated acids $C + H_2SO_4 \rightarrow CO_2 + 2SO_2 + 2H_2O$ $S + 2H_2SO_4 \rightarrow 3SO_2 + 2H_2O$ $P + 5HNO_3 \rightarrow H_3PO_4 + 5NO_2 + H_2O$ $S + 6HNO_3 \rightarrow H_2SO_4 + 6NO_2 + 2H_2O$ React with oxygen to form acidic oxides which dissolve in water to form acids $C + O_2 \rightarrow CO_2$ $S + O_2 \rightarrow SO_2$; $SO_2 + H_2O \rightarrow H_2SO_3$

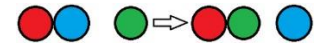
Alloys and their uses

Mercury	Amalgam (Hg + metal)	Filling for tooth
Iron	Steel 73%Fe,18%Cr, 8%Ni, 1% C	Cutlery, utensils, instruments
Zinc/Copper	Brass 60-70%Cu, 40-30%Zn	Statues, vessels, handles, screws
	Bronze (Cu and Sn)	Medals, statues, utensils
Lead	Solder (lead and tin)	Welding, fuse

Uses of some metals and non-metals

METALS	NON-METALS
Cu, Al used to make wires	Hydrogen used to make ghee and dalda from oils Hydrogen used as rocket fuel
Iron, copper Al used to make household utensils	Carbon used as electrodes
Silver, gold copper used in jewellery	Nitrogen used for food preservation
Zinc used for galvanization	Sulphur used for hardening of rubber
Aluminium foil used to pack food	Sulphur used in matchsticks and gun powder

Displacement reaction:

- DISPLACEMENT REACTIONS
  A + BC → AC + B
  
- Depends on Activity series. Higher up metal displaces lower metal