

CHEMISTRY STUDY MATERIALS FOR CLASS 10

GANESH KUMAR

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Chapter- 3 (Metals and Non-metals- Revision Notes)

Occurrence of Metals

Minerals : Elements or compounds occurring naturally are minerals.

Ores : Mineral from which metal can be profitably extracted is an ore. For example, sulphide ore, oxide ore, carbonate ore.

- Metals at the bottom of activity series like gold, platinum, silver, copper generally occur in free state. But copper and silver also occur as sulphide and oxide ores.
- Metals of medium reactivity (Zn, Fe, Pb etc.) occur mainly as oxides, sulphides or carbonates.
- Metals of high reactivity (K, Na, Ca, Mg and Al) are very reactive and are thus found in combined state.

GANGUE: the commercially valueless material like soil, sand, etc. in which ore is found called gangue.

The gangue is removed from the ore. Various Methods to remove gangue:

1. GRAVITY SEPARATION
2. FROTH FLOATATION
3. MAGNETIC SEPARATION

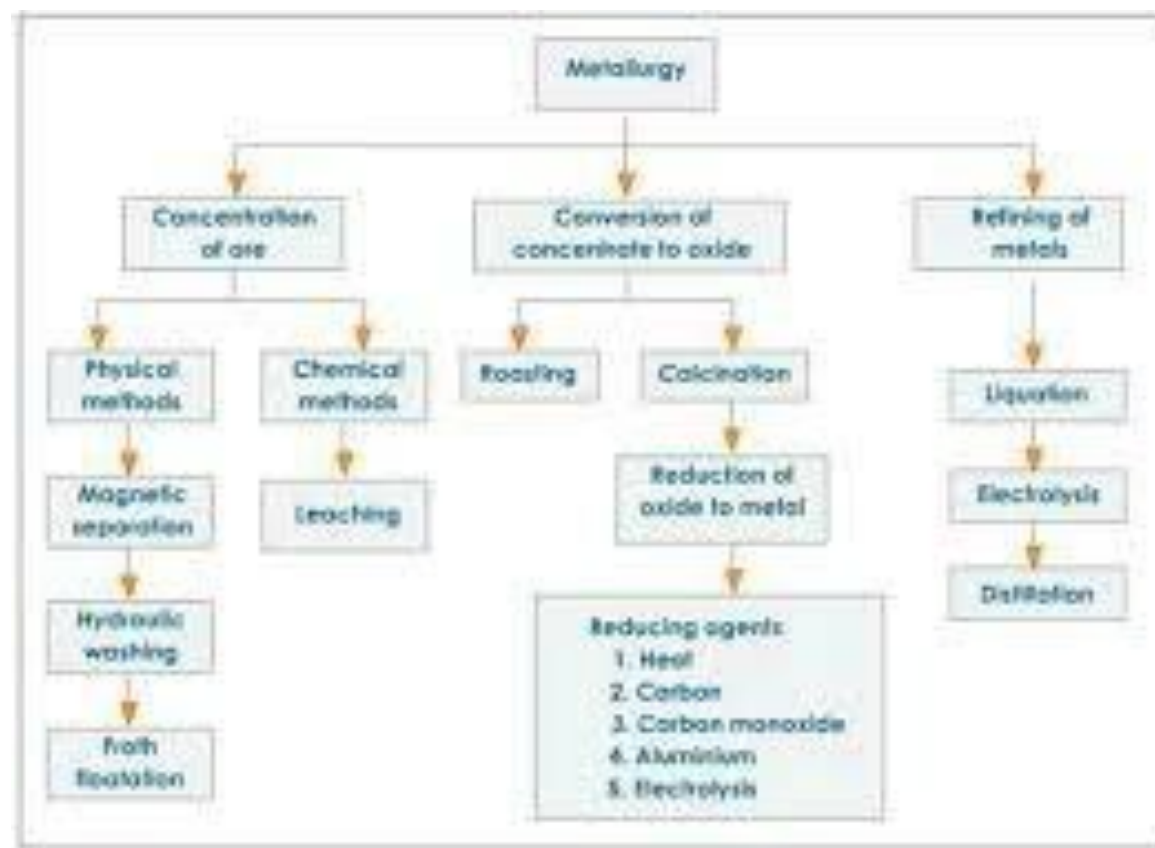
METALLURGY : Step-wise process of obtaining metal from its ore.

I. *Enrichment of ore

II. *Obtaining metal from enriched ore.

III. *Refining of impure metal to obtain pure metal.

Enrichment of Ores : It is the process of the removal of impurities such as soil, sand etc. from the ore prior to extraction of the metal. Different separation techniques are used based on physical or chemical properties of ore. Extracting Metals from the Enriched Ore



Metal	Name of ore	Chemical name of main mineral in ore	Formula
sodium	rock salt	sodium chloride	NaCl
calcium	limestone	calcium carbonate	CaCO_3
magnesium	magnesite	magnesium carbonate	MgCO_3
aluminium	bauxite	aluminium oxide	Al_2O_3
zinc	zinc blende	zinc sulphide	ZnS
iron	haematite magnetite	iron(III) oxide black iron oxide (iron(II), (III) oxide)	Fe_2O_3 Fe_3O_4
tin	cassiterite	tin(IV) oxide	SnO_2
lead	galena	lead(II) sulphide	PbS
copper	copper pyrite or chalcopyrite	mixture of copper(II) sulphide and iron sulphide	CuFeS_2 ($\text{CuS} + \text{FeS}$)
mercury	cinnabar	mercury(II) sulphide	HgS

Main minerals of metal ores
