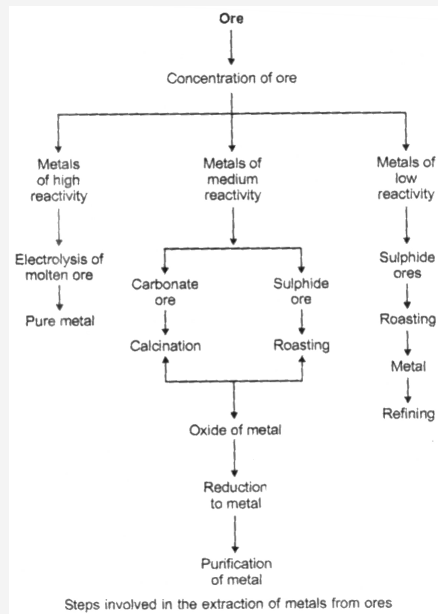


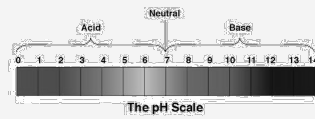
## indicators

INDICATOR	ACIDS	BASES
phenolphthalein	colourless	pink
methyl orange	red	yellow
red litmus	red	blue
blue litmus	red	blue

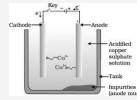
## extraction of metals



## ph



## refining of metals



## functional group

Hetero atom	Class of compounds	Formula of functional group
Cl/Br	Halo- (Chloro/bromo) alkane	-Cl-Br (substitutes for hydrogen atom)
Oxygen	1. Alcohol	-OH
	2. Aldehyde	$\begin{matrix} H \\   \\ -C- \\   \\ O \end{matrix}$
	3. Ketone	$\begin{matrix} -C- \\    \\ O \end{matrix}$
	4. Carboxylic acid	$\begin{matrix} O \\   \\ -C-OH \end{matrix}$

## reactivity series

K	Potassium	Most reactive  Reactivity decreases  Least reactive
Na	Sodium	
Ca	Calcium	
Mg	Magnesium	
Al	Aluminium	
Zn	Zinc	
Fe	Iron	
Pb	Lead	
H	Hydrogen	
Cu	Copper	
Hg	Mercury	
Ag	Silver	
Au	Gold	

## alloy

ALLOY	COMPOSITION
brass	Cu + Zn
stainless steel	Fe + Ni + chromium, chromium
bronze	Cu + Sn copper, tin
solder	Pb + Sn lead, tin
amalgam	if any one is mercury