

**1) Names and symbols of the following elements**

Al	Aluminum	Mg	Magnesium
Ar	Argon	Mn	Manganese
Ba	Barium	Hg	Mercury
Be	Beryllium	Ne	Neon
B	Boron	Ni	Nickel
Br	Bromine	N	Nitrogen
Ca	Calcium	O	Oxygen
C	Carbon	P	Phosphorus
Cl	Chlorine	Pt	Platinum
Cr	Chromium	K	Potassium
Co	Cobalt	Sc	Scandium
Cu	Copper	Si	Silicon
F	Fluorine	Ag	Silver
Au	Gold	Na	Sodium
He	Helium	S	Sulfur
H	Hydrogen	Ti	Titanium
I	Iodine	U	Uranium
Fe	Iron	V	Vanadium
Pb	Lead	Zn	Zinc
Li	Lithium		

**2) Table SI prefix multipliers and symbols**

(common Mega (M) to nano (n))

Table 1.1

Mass, length, volume, time, temperature, quantity of substance, energy

**3) Formulas for**

- 1) density
- 2) percent
- 3) temperature conversion between C and K

**4) Atomic/Subatomic Particles**

- Alpha  $\alpha$  or  ${}^4\alpha$  or  ${}^4\text{He}$  or  ${}^4_2\alpha$
- Beta  $\beta$  or  $\beta^-$  or  ${}^{-1}_0\beta$
- Gamma  $\gamma$  or  ${}^0_0\gamma$
- Positron  $\beta^+$  or  ${}^0_1\beta$
- Proton  ${}^1_1p$
- Neutron  ${}^1_0n$
- Electron  ${}^{-1}_0e$
- Deuterium  ${}^2_1H$  or  ${}^2_1D$
- Tritium  ${}^3_1H$  or  ${}^3_1T$

**5) Groups on the periodic table**

Metals

Nonmetals

Metalloids

Transition metals

Noble gases

Alkali metals

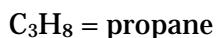
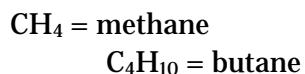
Alkaline earth metals

Halogens

## **6) Polyatomic Ions:**

$\text{C}_2\text{H}_3\text{O}_2^-$	acetate	$\text{SO}_4^{2-}$	sulfate
$\text{NH}_4^+$	ammonium	$\text{Hg}_2^{2+}$	mercury(I)
$\text{CO}_3^{2-}$	carbonate	$\text{SO}_3^{2-}$	sulfite
$\text{HCO}_3^-$	bicarbonate	$\text{HSO}_4^-$	bisulfate
$\text{ClO}_4^-$	perchlorate	$\text{HSO}_3^-$	bisulfite
$\text{ClO}_3^-$	chlorate	$\text{NO}_3^-$	nitrate
$\text{ClO}_2^-$	chlorite	$\text{NO}_2^-$	nitrite
$\text{ClO}^-$	hypochlorite	$\text{CrO}_4^{2-}$	chromate
$\text{PO}_4^{3-}$	phosphate	$\text{Cr}_2\text{O}_7^{2-}$	dichromate
$\text{CN}^-$	cyanide	$\text{SCN}^-$	thiocyanate
$\text{OH}^-$	hydroxide	$\text{MnO}_4^-$	permanganate

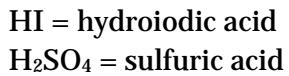
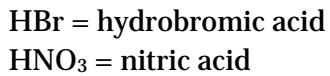
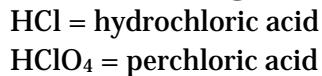
## **7) Basic organic compounds (simple alkanes)**



## **8) Covalent prefixes**

Mono (1) to Deca (10) (table 4.4)

## **9) Strong acids**



## **10) solubility rules**

- all compounds containing the following ions are soluble in water:  
group 1 ions, ammonium ion, nitrate ion, acetate ion and perchlorate ion
- compounds containing the following ions are usually soluble, common exceptions are noted  
group 17 ions (halides)  
unless the cation is:  $\text{Ag}^+$ ,  $\text{Cu}^+$ ,  $\text{Hg}_2^{2+}$  or  $\text{Pb}^{2+}$ , in which case it is NOT soluble  
sulfate ion  
unless the cation is:  $\text{Ba}^{2+}$ ,  $\text{Ca}^{2+}$ ,  $\text{Hg}^{2+}$ ,  $\text{Pb}^{2+}$  or  $\text{Sr}^{2+}$ , in which case it is NOT soluble
- $\text{Ca}(\text{OH})_2$ ,  $\text{Sr}(\text{OH})_2$  and  $\text{Ba}(\text{OH})_2$  are soluble.