## Classes of chemical compounds - 2

A. Reactions where acids and bases react with each other are called reactions of neutralization. In these reactions a salt and water are formed. E.g. below is a neutralization reaction between hydrochloric acid ( HCl - acid) and sodium hydroxide ( NaOH - base) with formation of salt (sodium chloride, NaCl ) and water:

$$
\begin{gathered}
\mathrm{HCl}+\mathrm{NaOH} \rightarrow \mathrm{NaCl}+\mathrm{H}_{2} \mathrm{O} \\
\mathrm{H}_{2} \mathrm{SO}_{4}+2 \mathrm{NaOH} \rightarrow \mathrm{Na}_{2} \mathrm{SO}_{4}+2 \mathrm{H}_{2} \mathrm{O}
\end{gathered}
$$

B. When acidic oxides react with water, they form acids. E.g.:

$$
\mathrm{SO}_{3}+\mathrm{H}_{2} \mathrm{O} \rightarrow \mathrm{H}_{2} \mathrm{SO}_{4}
$$

C. When basic oxides react with water, they form bases. E.g.:

$$
\mathrm{CaO}+\mathrm{H}_{2} \mathrm{O} \rightarrow \mathrm{Ca}(\mathrm{OH})_{2}
$$

1. Using Periodic Table of Elements write chemical formulas of oxides for the following elements: $\mathrm{K}, \mathrm{Ba}, \mathrm{Fe}(\mathrm{II}), \mathrm{Cr}(\mathrm{III}), \mathrm{CI}(\mathrm{VII}), \mathrm{Si}(\mathrm{IV})$. Underline formulas of acidic oxides.
2. Write chemical equations for the following transformations:

$$
\begin{gathered}
\mathrm{Ca} \rightarrow \mathrm{CaO} \rightarrow \mathrm{Ca}(\mathrm{OH})_{2} \rightarrow \mathrm{CaSO}_{4} \\
\mathrm{~S} \rightarrow \mathrm{SO}_{2} \rightarrow \mathrm{SO}_{3} \rightarrow \mathrm{H}_{2} \mathrm{SO}_{4} \rightarrow \mathrm{CaSO}_{4}
\end{gathered}
$$

3. How many grams of concentrated sulfuric acid $\left(\mathrm{H}_{2} \mathrm{SO}_{4}\right)$ will be necessary to neutralize water solution containing 4 g of NaOH ? Assume $100 \%$ sulfuric acid concentration.
