HW 25

## Classes of chemical compounds - 3

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. Write neutralization reactions between acids and bases that result in the following salts: $\mathrm{Al}_{2}\left(\mathrm{SO}_{4}\right)_{3}, \mathrm{NiCO}_{3}, \mathrm{Fe}\left(\mathrm{NO}_{3}\right)_{3}, \mathrm{Mg}\left(\mathrm{PO}_{4}\right)_{2}, \mathrm{PbS}, \mathrm{Li}_{2} \mathrm{SO}_{4}$
2. How many kg of $\mathrm{P}_{2} \mathrm{O}_{5}$ is necessary to obtain 98 kg of phosphoric acid $\mathrm{H}_{3} \mathrm{PO}_{4}$ ?
