

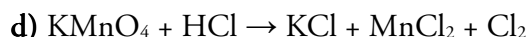
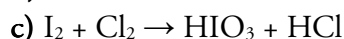
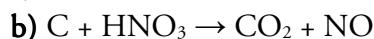
12th grade assignments

1) Identify what kind of chemical bonds are in the following chemical substances.



Write the electron formula (electron configuration) for ions Cl^- and Na^+ in NaCl.

2) Complete and balance chemical equations for the following reactions.



Write the electron formula (electron configuration) for the element that has the highest oxidation level in the equation.



Write the electron formula (electron configuration) for Al.

3) Free metal **B** is formed after reducing metal oxide **A** with CO. When metal **B** reacts with HNO_3 the following products are formed: salt **C**, nitrogen oxide and water. The reaction between **C** and NaOH gives insoluble substance **D**.

a) Identify the formula of metal oxide **A**, which contains ca 80,25% of metal **B** and in which the metallic element has oxidation level +2.

b) You have to obtain 495g of substance **D**. Using calculations, show which method is cheaper: i) or ii).

i) First method: You have to take 10% excess of metal oxide **A**, the loss of salt **C** is 15% and the yield of substance **D** is 75%. The data describes the following reactions:



ii) Second method: You start off by roasting sulfide **E** of metal **B**, in which the loss of metal oxide **A** is 22%. Then metal oxide **A**, which has to be taken 5% excess, is reduced by hydrogen into a free metal **B**. The reaction between element **F** and metal **B** gives you salt **G** (%**B**=47,79), where the oxidation level of the anion is 3 units lower than that of the cation. The yield of salt **G** is 92%. Finally salt **G** reacts with NaOH solution, giving insoluble substance **D**, which has yield 75%.

Prices: Tub, which contains 125g of substance **A**, costs **33\$**. Tub, which contains 200g of substance **E**, costs **45\$**. **NB!!! You can only buy whole number of tubs.**

c) Write the formulas and names for the substances **A-G**.

d) Finish and balance the following chemical equations:

