

Experiment 20, Oxidation-Reduction

Name _____ Per _____

Purpose: To investigate the oxidation and reduction of some metals and some non-metals. Remember that oxidation is the loss of electrons and reduction is the gain of electrons. **LEO GER**. You cannot have one without the other!

Procedure:

Note: 1 mL = 20 drops.

- Place **3 ml** of **Chlorine water**, **Bromine water**, and **Iodine water** into three separate test tubes.
- Add **1 ml** of **CCl₄**, to each tube of halogen water. Shake each tube sideways to mix well for 20 seconds. Note the color of the **CCl₄** phase in each tube.

TESTS FOR REDOX REACTIONS

- Put **3 ml** of **0.1 M NaBr** in one tube and **3 ml** of **0.1 M NaI** in another tube. To each add **1 ml** of **CCl₄**. Add **1 ml** of **Chlorine water** to each tube and shake sideways for 20 seconds. Note the color of the **CCl₄** layer in each and compare with the preliminary tests in **a** and **b**.
- Put **3 ml** of **0.1 M NaCl** in one tube and **3 ml** of **0.1 M NaI** in another tube. To each add **1 ml** of **CCl₄**. Add **5 drops** of **Bromine water** to each tube and shake sideways for 20 seconds. Note the color of the **CCl₄** layer in each and compare with the preliminary tests in **a** and **b** above.
- Put **3 ml** of **0.1 M NaCl** in one tube and **3 ml** of **0.1 M NaBr** in another tube. To each add **1 ml** of **CCl₄**. Add **5 drops** of **Iodine water** to each tube and shake sideways for 20 seconds. Note the color of the **CCl₄** layer in each and compare with the preliminary tests in **a** and **b** above.

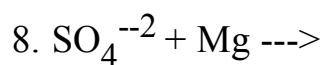
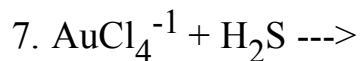
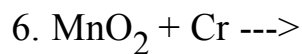
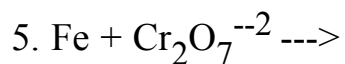
Questions:

- Which of the halide ions tested was oxidized by both of the other halogen elements?
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- Which halide ion was oxidized by only one halogen element?
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- Which halide ion was not oxidized by any of the halogen elements?

4. Arrange the halogen half-reactions in a column in the order you found above. (Let X = a halogen).



Balance the following equations using Appendix 8. Check the atoms & charges, get the voltage, E, and predict if the reaction will go.



Write a Critique for this lab.