

## Questions and problems to solve and learn

### Exercises No. 4-6

#### Redox reactions and titrations

What are redox reactions?

Definition of oxidation and reduction. The concept of the redox couple.

Calculation of redox equivalents.

The cell and half-reaction potentials.

Redox potential - Nernst equation.

Standard electrode potentials.

Predicting the redox half-reactions.

$E^0$  and the equilibrium constant.

Redox-amphoteric substances.

Titration based on redox reactions: selecting and evaluating the end point.

Redox titration methods (oxidizing agents):

iodimetry/iodometry, permanganometry, bromometric method.

#### Experiments:

4. Permanganometric determination of calcium.

5. Determination of phenol using a bromometric method.

6. Determination of dissolved oxygen by Winkler titration.

#### Recommended References:

1. Analytical Chemistry; G.D. Christian, P.K. (Sandy) Dasgupta, K. A. Schug; John Wiley & Sons, Inc.

2. Modern Analytical Chemistry; D. Harvey; The McGraw-Hill Companies.

3. Quantitative Chemical Analysis; D.C. Harris; W.H. Freeman and Company, NY.

4. Lectures on analytical chemistry:

section 3 Basic tools and operations part 1 Volumetric anal.

section 8 Redox reactions

section 9 Redox titrations