

Item	Performance/Task: The student will:	text (Tro)
Electrochemistry		
1	Be able to balance redox reactions by the half reaction method.	19.1
2	Be able to describe how an electrochemical cell works, with it various parts. Cells include: Galvanic, Leclanché, mercury, lead storage, Ni-Cd, lithium , fuel cell, concentration cells, Downs cell,	19.2, 19.6
3	Know the definitions used in electrochemistry including: anode, cathode, electrolyte, anolyte, catholyte, half cell reaction, voltage, electromotive force or emf	19.2
4	Be able to describe and use standard (reduction) potentials and how they are derived from thermodynamics.	19.3
5	Be able to interconvert from standard molar Gibbs' free energy to standard potentials using the standard hydrogen electrode	
6	Be able to calculate standard potentials for a cell.	19.3
7	Be able to calculate non-standard potentials for a cell using the Nernst equation.	19..5
8	Be able to recognize whether a redox reaction is spontaneous or not and, related, whether a cells emf is positive or negative.	19.4
9	Be able to describe the principal mechanism of aqueous corrosion	19.7
10	Be able to calculate quantities of material evolved (or used) in an electroplating (or galvanic) cell using Faraday's law	19.8
Chemical Kinetics		
11	Be able to define mathematically the rate of a reaction and how this is related to other expressions of rate.	13.1
12	Be able to determine a rate law and make calculations base upon a rate law.	13.2
13	Be able to express the simple zero, first, and second order integrated rate laws and use them to make calculations.	13.3
14	Be able to utilize the concept of "half life" for the first order integrated rate law to make calculations.	13.3
15	Be able to explain the collision theory and the transition state theory to calculate the temperature dependance (Arrhenius equation both simple substitution and parametrically) of the rate constant.	13.4
16	Be able to relate reaction mechanisms and elementary steps to obtain the rate law	13.5
17	Know the role of catalysts and be able to site some examples and how it affects a reaction.	13.6