

Problem Set #2 Electrochemistry

Name: _____ Period: ____

A dilute solution of sodium sulfate, Na_2SO_4 , was electrolyzed using inert platinum electrodes. In a separate experiment, a concentrated solution of sodium chloride, NaCl , was electrolyzed also using inert platinum electrodes. In each experiment, gas formation was observed at both electrodes.

(a) Explain why metallic sodium is not formed in either experiment.

(b) Write balanced equations for the half-reactions that occur at the electrodes during electrolysis of the dilute sodium sulfate solution. Clearly indicate which half-reaction occurs at each electrode.

(c) Write balanced equations for the half-reactions that occur at the electrodes during electrolysis of the concentrated sodium chloride solution. Clearly indicate which half-reaction occurs at each electrode.

(d) Select two of the gases obtained in these experiments, and for each gas, indicate one experimental procedure that can be used to identify it.