Teacher's Tools® Chemistry

Electrochemistry: Electrolysis: Worksheet 4

1. 10.0 A is passed through molten aluminum chloride for 5.5 hours. How many grams of aluminum metal could be produced by this electrolysis?

(A) 18.5 g (B) 55.4 g (C) 91.2 g (D) 273 g

2. In the electroplating of silver from cyanide solution, the cathode reaction is:

$$Ag(CN)_2^-(aq) + e^- \text{-----> } Ag_{(s)} + 2CN^-(aq)$$

How long would it take for 8.45 g of silver to be deposited by a current of 4.5 A?

(A) 28.0 sec (B) 28.0 min (C) 1679 min (D) 1679 hrs

3. Aluminum oxide may be electrolyzed at 1000°C to furnish aluminum metal.

The cathode reaction is: $Al^{3+} + 3e^- \text{------> } Al_{(s)}$

To prepare 5.12 kg of aluminum metal by this method would require how many coulombs?

(A) 5.49×10^7 C (B) 1.83×10^7 C (C) 5.49×10^4 C (D) 5.49×10^1 C

4. In an electrolytic cell, a current of 0.250 ampere is passed through a solution of cadmium chloride.

(A) Write the equation for the half-reactions that occurs at the anode and cathode.

(B) When the cell operates for 2.00 hours under a current of 0.250 A, how much cadmium is deposited at cathode?

5. Use a table of standard reduction potentials to determine the reaction that would occur for the electrolysis of each of the following solutions.

(A) a solution of potassium iodide is electrolyzed.

(B) a solution of barium flouride is electrolyzed.

(C) a solution of nickel bromide is electrolyzed.