

Friday Worksheet

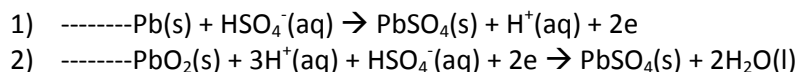
Name: .....

Electrolysis worksheet 4

1) An ornament was coated with a metal, M, by electrolysis of a solution of the metal ion,  $M^{x+}$ . During the electrolysis a current of 2.46 amperes was applied for 230 seconds. The ornament was coated in  $1.95 \times 10^{-3}$  mol of metal M.

- a) What is the value of x in  $M^{x+}$
  
- b) If the mass of the metal coating on the ornament was 0.102 grams identify the metal.
  
- c) A medal is plated with metal M in an electrolytic cell. From the data given below calculate the time, in minutes, taken to plate the medal.  
Mass of medal before copper plating = 23.2 g  
Mass of medal after plating with metal M = 26.4 g  
Current = 0.980 A

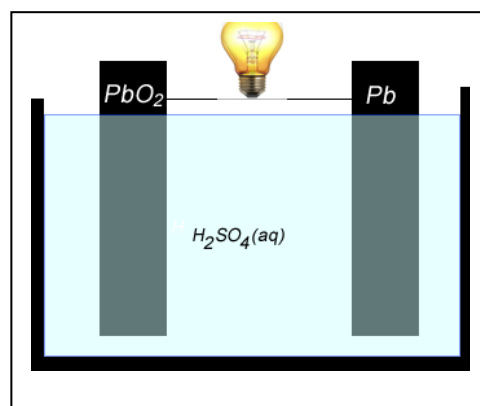
2) In a car battery the following two reactions take place during discharge.



- a) Which reaction occurs at the:
  - anode-
  
  - cathode -

) The image on the right represents a cell discharging  
On this diagram indicate the:

anode,  
cathode,  
direction of electron flow.



c) When the cell is being recharged it is connected to an external power source, as shown on the right.

i. What is the polarity of the X and Y terminals of the external power source?

Terminal X -

Terminal Y -

ii. Which terminal is the anode and which is the cathode

Terminal X -

Terminal Y -

iii. During recharging, what are the reactions taking place at the:

anode

cathode.

d) In the diagram one of the terminals is shown to consist of  $\text{PbO}_2$  only. Is this right? Explain.

