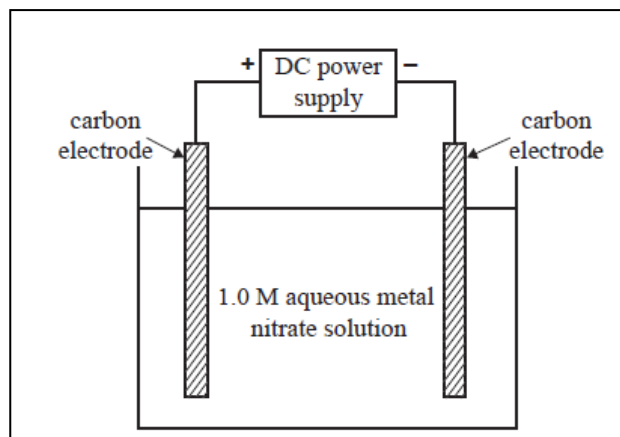


Electrolytic cells worksheet 7

- 1) A current of 0.85 Amps was passed through the electrolytic cell shown on the right for 57.0 minutes . This was done three times and each time a different solution was used. The first time a 1.0 M $\text{Cr}(\text{NO}_3)_3$ solution was used. The second time a 1.0 M $\text{Cu}(\text{NO}_3)_2$ solution was used and the third time a 1.0 M AgNO_3 solution was used. Calculate the mass of each metal that was deposited on each separate occasion.



- 2) An ornament was coated with a layer of metal M by electrolysis of the metal ion M^{y+} . A current of 1.85 amperes was applied for 20.00 minutes. What was the value of “y” if an amount of 5.75×10^{-3} mol of metal M was deposited?
- 3) Given the following standard electrode potentials in volts
- $$\text{HOBr}(\text{aq}) + \text{H}^+(\text{aq}) + 2\text{e}^- \rightleftharpoons \text{Br}^-(\text{aq}) + \text{H}_2\text{O}(\text{l}) \quad +1.33 \text{ V}$$
- $$2\text{HOBr}(\text{aq}) + 2\text{H}^+(\text{aq}) + 2\text{e}^- \rightleftharpoons \text{Br}_2(\text{l}) + 2\text{H}_2\text{O}(\text{l}) \quad +1.60 \text{ V}$$
- Explain why a reaction between chlorine gas and bromine ions is expected to produce no significant amount of HOBr product.