**Applying Faraday’s Laws**

 **Question**: A current of 4.50 amps is run for 8 hours and 30 minutes

 through a molten solution of aluminium chloride, AlCl3.

1. Calculate the volume of chlorine gas that will be produced if

 the temperature is 256 0C and the pressure 150 kPa.

Al3+



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1. Calculate the current required to produce 2.25 kg of

 aluminium in 7.50 hours.



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 **Solution**

1. Al3+(l) + 3e 🡪 Al(l) 2Cl-(l) 🡪 Cl2(g) + 2e

 Q= It = 4.5 × 8.5 × 60 × 60 = 1.38 × 105 C

*n*(e) =  = 1.43 mol *n*(Cl) = ½ ne = 0.713 mol

 *V =*  20.9 L

1. *n*(Al) =  = 83.3 mol *n*(e) = 3*n*(Al) = 250 mol Q = 96500 × 250 = 2.41× 107

 *I* =  = 894 amps