Sem 2 (2009/2010) : Stoichiometry

Q2(b) (i) $Cu(s) + 2AgNO_3(aq) \longrightarrow Cu(NO_3)_2(aq) + 2Ag(s)$

12.340g, 0.125M, 255mL ← given

We assume all the $Ag^+$ (from $AgNO_3$) is converted to Ag

$$\therefore n(Ag^+) = \frac{(255mL)(0.125M)}{1000} = 0.0319\ mol$$

$$n_{Cu} = \frac{1}{2} \times n_{Ag^+} = \left(\frac{1}{2} \times 0.0319\right) mol$$

$$n_{Cu} = 0.01595\ mol$$

$$\therefore m_{Cu\ (reacted)} = (0.01595 \times 63.546)g$$

$$= 1.013g$$

$$m_{Cu\ (unreacted)} = (12.340 - 1.013)g$$

$$= 11.327g$$

$$= 11.3g\ (Ans)$$

(ii) $n_{Ag\ (formed)} = n_{Ag^+} = 0.0319\ mol$

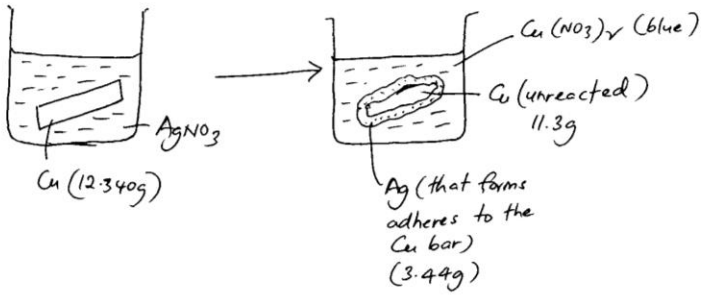
$$\therefore m_{Ag} = 0.0319\ (107.8682)g$$

$$= 3.449g$$

The mass of the copper bar after reaction $= (11.3 + 3.44)g$

$$= 14.749$$

$$= 14.7g\ (Ans)$$

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