Checking Where Plated Copper Came From

Scoring guide · one credit per question · review written work against each rubric

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Question 1

Choice (1)

The Cu^{2+} ion gains two electrons to form a neutral copper atom. Gaining electrons is reduction.

Question 2

In P the other electrode adds 0.010 mol copper to the liquid and the strip removes 0.010 mol, for no net change. In Q the strip removes 0.010 mol and the other electrode supplies none, so dissolved copper decreases by 0.010 mol.

Question 3

The strip removes 0.010 mol, but the solution loses only 0.004 mol overall. The second electrode must supply 0.010 − 0.004 = 0.006 mol to the liquid.

Question 4

Both strips gained 0.010 mol of copper. Each mole of deposited copper needs two moles of electrons, so each used 0.020 mol of electrons for the copper reduction. The difference at the other electrode changes the copper source.