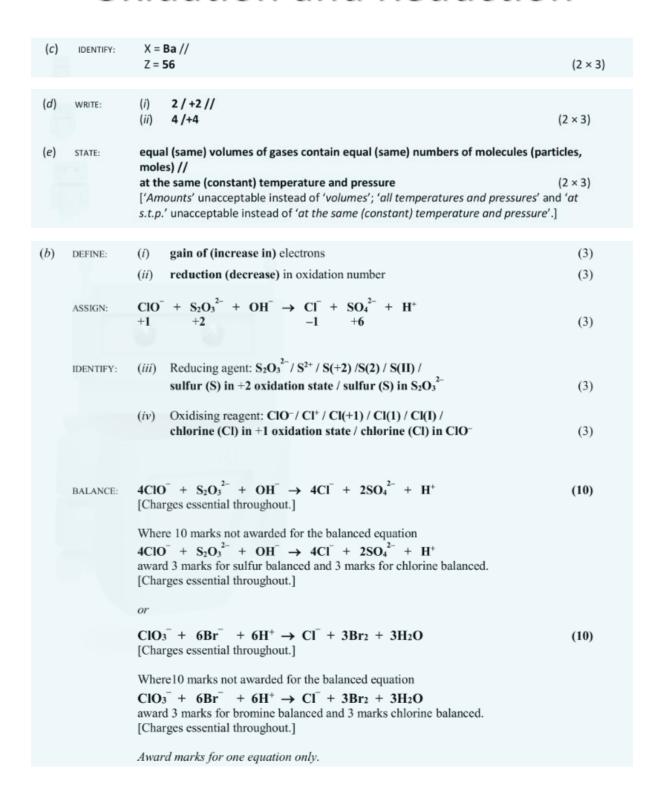
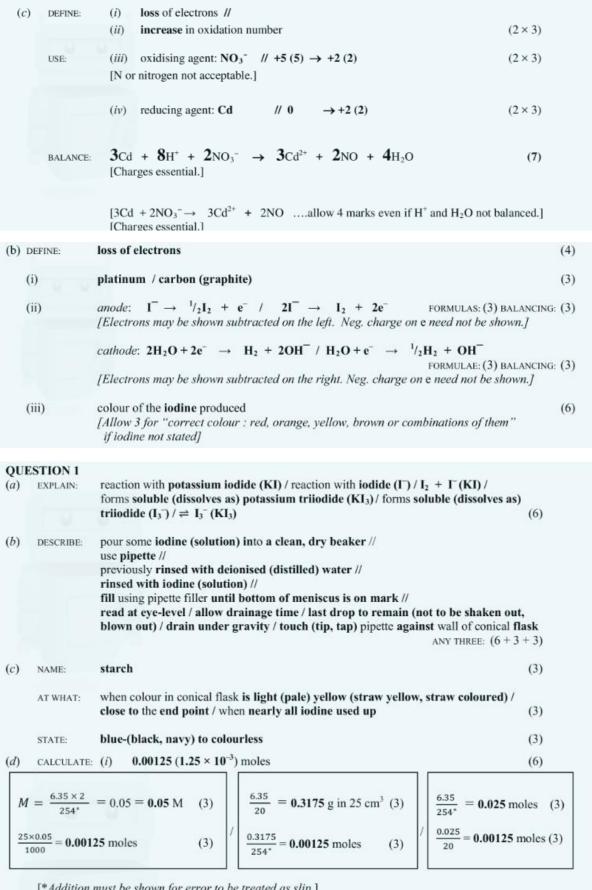
Oxidation and Reduction





[*Addition must be shown for error to be treated as slip.]

 $0.0025 (2.5 \times 10^{-3})$ moles (ii) (3) $0.00125 \times 2 = 0.00250 = 0.0025$ moles (3) (iii) 0.14 M (6) $\frac{0.0025}{10.0025} = 0.000140 = 0.000140 \text{ moles / cm}^3$ (3)(3)M = 0.140 = 0.140 M(3) $0.000140 \times 1000 = 0.140 =$ **0.14**0 M (3)(iv) 35 g/L [34.7 - 35 g/L](3) $0.140 \times 248** = 34.72 = 35 \text{ g} / \text{L}$ [34.7 - 35 g / L] [**Addition must be shown for error to be treated as slip] [I mark to be deducted for incorrect rounding off resulting in candidate's final numerical answer lying outside given values or given range but deduction to be made once only.] (e) EXPLAIN: deionised water could contain non-ionic substances that could be oxidised or reduced / deionised water could contain chlorine oxidising reagent / deionised water has had only ions removed [(5) allowed for 'distilled water is pure (purer, contains less impurities, contains no dissolved substances)' or 'deionised water is less pure (contains more impurities, contains dissolved substances)'.]['Deionised water contains no ions' is not acceptable.] (c) (i) HOW: it decreases (4)(ii) ASSIGN: I' equation: oxidation number of Br in $Br_2 = 0$ (3) oxidation number of Br in Br = -1(3) 2nd equation: oxidation number of Cl in $Cl_2 = 0$ (3) oxidation number of Cl in Cl = -1(3) [The oxidation numbers may be written under the appropriate formulas] $Cl_2 + SO_3^{2-} + H_2O \rightarrow 2Cl^- + SO_4^{2-} + 2H^+$ (6) BALANCE: [Do not insist on correct formulas (they are given). (6) or (0) for balancing numbers. Accept only the *smallest* correct integral balancing numbers (2 & 2) - not multiples.] increasing atomic radius (size) / increase in number of shells / atoms get bigger / (iii) WHY: increase in shielding (screening) / decrease in electronegativity (attraction for electrons)