153. One litre of a mixture of O_2 and O_3 at STP was allowed to react with an excess of acidified solution of KI. The iodine liberated required $40\,mL$ of $\dfrac{M}{10}Na_2S_2O_3$ solution for titration. What is the weight per cent of ozone in the mixture ? (▶)

Ultraviolet radiation of wavelength 300 nm can decompose ozone. Assuming that one photon can decompose one ozone molecule, how many photons would have been required for the complete decomposition of ozone in the original mixture?

154. A $10\,g$ sample of only CuS and Cu_2S was treated with 100 mL of 1.25 M $K_2Cr_2O_7$. The products obtained were Cr^{3+}, Cu^{2+} and SO_2. The excess oxidant was reacted with $50\,mL$ of Fe^{2+} solution : $25\,mL$ of the same Fe^{2+} solution required 0.875 M $KMnO_4$ under acidic condition, the volume of $KMnO_4$ used was $20\,mL$. Find the % of CuS and Cu_2S in the sample. (▶)

155. 1.249 g of a sample of pure $BaCO_3$ and impure $CaCO_3$ containing some CaO was treated with dil. HCl and it evolved 168 mL of CO_2 at N.T.P. From this solution, $BaCrO_4$ was precipitated filtered and washed. The precipitate was dissolved in dil. H_2SO_4 and diluted to $100\,mL$. $10\,mL$ of this solution when treated with KI solution liberated iodine which required exactly $20\,mL$ of 0.05 N $Na_2S_2O_3$. Calculate the percentage of CaO in the sample.

156. For estimating ozone in the air, a certain volume of air is passed through an alkaline KI solution when O_2 is evolved and iodide is oxidized to iodine. When such a solution is acidified, free iodine is evolved which can be titrated with standard $Na_2S_2O_3$ solution: In an experiment, 10 L of air at 1 atm and 27°C were passed through an alkaline KI solution, and at the end, the iodine was entrapped in a solution which on titration as above required 1.5 mL of 0.01 N $Na_2S_2O_3$ solution. Calculate volume percentage of ozone in the sample.

157. A 2.18 g sample contains a mixture of XO and X_2O_3. It reacts with 0.015 moles of $K_2Cr_2O_7$ to oxidize the sample completely to form XO_4^- and Cr^{3+}. If 0.0187 mole of XO_4^- is formed, what is the atomic mass of X ? (▶)

158. An aqueous solution containing 0.10 g KIO_3 (formula wt. = 214.0) was treated with an excess of KI solution: The solution was acidified with HCl. The liberated I_2 treated with 0.063 M thiosulphate solution to decolourize the blue starch-iodine complex. Calculate the volume of the sodium thiosulphate solution consumed. (▶)