

Credit will be given for the correct use of significant figures in answers to part (c).

(1 mark)

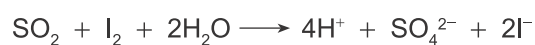
(c) A sample of white wine was treated to ensure all of the sulfur present was in the form of  $\text{SO}_2$ . The  $\text{SO}_2$  concentration was then determined by titration. In one titration procedure, white wine was pipetted into a conical flask and titrated with an iodine solution.

- (i) State which one of the following should have been used to rinse the conical flask immediately before use: iodine solution, white wine, or distilled water.

\_\_\_\_\_ (1 mark)

- (ii) In one 20.0 mL sample of white wine, the  $\text{SO}_2$  concentration was calculated to be  $4.76 \times 10^{-3} \text{ mol L}^{-1}$ .

Calculate the volume of  $0.0120 \text{ mol L}^{-1}$  iodine solution that would have reacted in this titration, given that the equation for the reaction is:



(4 marks)

- (iii) Determine whether the  $\text{SO}_2$  concentration of  $4.76 \times 10^{-3} \text{ mol L}^{-1}$  in this sample was lower than the Australian legal limit of  $250 \text{ mg L}^{-1}$  for wine.

(3 marks)

TOTAL: 15 marks