Student 5: Low Achieved

Purpose:

To investigate what happens to the vitamin C in fruit juice when it is heated to 20, 40, 60, and 80 degrees Celsius for 10 minutes.

Calculations:

Part A – calculation of blank titration: $V(S_2O_3^{2-}) = 0.02925$ $n(S_2O_3^{2-}) = 0.0511 \times 0.02925 = 1.49 \times 10^{-3}$ $n(I_2 \text{ total}) = \frac{1}{2} \times 1.49 \times 10^{-3} = 7.47 \times 10^{-4}$

Part B – calculation of back titration: $20^{\circ}C$ $n(I_2) = 7.47 \times 10^{-4}$ $n(S_2O_3^{2^-}) = 0.01 \times 0.0182 n(S_2O_3^{2^-}) = 1.82 \times 10^{-4}$ $n(I_2 \text{ remaining}) = \frac{1}{2} \times 1.82 \times 10^{-4} = 0.91 \times 10^{-4}$

n(l₂ reacted with vit C) = n(l₂ remaining) = 7.47 x10⁻⁴ – 0.91 x10⁻⁴ = .656 x10⁻⁴ mol = n(vitamin C) n(vitamin C) c(vitamin C) = n/V = .656 x10⁻⁴ / 0.1 = 0.656 x10⁻³

Conclusion: As the temperature is increased the volume of thiosulfate needed increases.