Vitamin C Clock, Integrated Rate Laws: Teacher Guide

Preparing Reagents:

Material	Instructions to make 1 L of each solution
0.25 M H_2O_2	Start with 3 % H_2O_2 (can be purchased at a drugstore). This solution is approximately 1 M. Dilute by 4 (e.g. mix 250 ml of this solution and 750 ml of deionized water) to achieve the desired concentration.
1.25 M NaI	Sodium iodide has a molecular mass of 149.89 g/mol. To prepare a 1.25 M NaI solution, dissolve 187.3 g in 1 L of deionized water.
0.11 M Vitamin C	Vitamin C, also known as L-ascorbic acid, has a molecular mass of 176.12 g/mol. To prepare a 0.11 M vitamin C solution, dissolve 19.4 g in 1 L of deionized water.
1 M acetic acid with starch	Acetic acid (glacial) has a molar mass of 60.05 g/mol and a density of 1.05 g/cm^3. To make the desired solution, combine 57 ml of acetic acid with 143 ml of spray starch (can be bought in a can from a drugstore) and 800 ml of water.

Of these solutions, you will need the following amount per set of experiments:
- 9 ml of 0.25 M H_2O_2
- 18 ml of 1.25 M NaI
- 10.5 ml of 0.11 M Vitamin C
- 3 ml of 1 M acetic acid with starch

Other materials (per set of experiments):
- deionized water (7.5 ml)
- 2 1 ml syringes
- 3 5 ml syringes
- 6 large test tubes or vials (each tube or vial should have a volume of at least 15 ml for adequate mixing)
- a stopwatch

References
1. Wright, Stephen W. *J. Chem. Ed.* **2002**, *79*(1), 41-43.
2. Vitz, E. *J. Chem. Ed.* **2007**, *84*(7), 1156-1157.