Kinetics Vs Thermodynamics Procedure

Part A:

1. Add 0.5 g of semicarbazide hydrochloride and 1 g of K_2HPO_4 to a 25 mL Erlenmeyer flask and dissolve the solids with 6 mL of distilled water.
2. Add 0.5 mL of cyclohexanone to a test tube containing 2.5 mL of ethanol. Pour this solution into the Erlenmeyer flask.
3. Swirl the flask for a couple of minutes and then filter the solid product. Scape the solid into a weigh boat to air-dry while you complete the other parts.
4. Obtain a melting point.

Part B:

1. Add 0.5 g of semicarbazide hydrochloride and 1 g of K_2HPO_4 to a 25 mL Erlenmeyer flask and dissolve the solids with 6 mL of distilled water.
2. Add 0.4 mL of 2-furaldehyde to a test tube containing 2.5 mL of ethanol. Pour this solution into the Erlenmeyer flask.
3. Swirl the flask for a couple of minutes and then filter the solid product. Scape the solid into a weigh boat to air-dry while you complete the other parts.
4. Obtain a melting point.

Part C:

1. Solution W1 and solution E1 are already prepared. W1 contains 3.0 g of semicarbazide hydrochloride in a dibasic potassium phosphate buffer. E1 contains 3.0 mL of cyclohexanone and 2.5 mL of 2-furaldehyde dissolved in ethanol.
2. Add 25 mL of solution W1 and 5 mL of solution E in separate flasks and cool them in an ice water bath.
3. Add solution E1 to solution W1 and swirl the mixture for a minute. Leave in the ice-water bath for 3 minutes then filter the solid product and scrape the product into a weigh boat to dry.
4. Obtain the melting point.
5. Add 25 mL of solution W1 and 5 mL of solution E1 in separate flasks (room temperature).
6. Add Solution E1 to Solution W1 and swirl the mixture for a minute. Leave in the ice-water bath for 3 minutes then filter the solid product and scrape the product into a weigh boat to dry.
7. Obtain the melting point.
8. Prepare 25 mL of solution W1 and 5 mL of solution E1 in separate flasks. Warm them both to ~80 ºC.
9. Add solution E1 to solution W1 and continue to heat for 10 minutes. Let the flask cool to room temperature and then cool further in the ice-water bath for 5 minutes then filter the solid product and scrape the product into a weigh boat to dry.
10. Obtain the melting point for all products.

Part D:

1. Solution W2 and solution E2 are already prepared. W2 contains 2.0 g of semicarbazide hydrochloride in a sodium carbonate buffer. E2 contains 2.0 mL of cyclohexanone and 1.6 mL of 2-furaldehyde dissolved in ethanol.
2. Add 12.5 mL of solution W2 and 6.8 mL solution E2 to separate flasks (room temperature).
3. Add solution E2 to solution W2 and swirl the mixture for a minute. Let stand for 5 minutes then filter the solid product and scrape the product into a weigh boat to dry.
4. Obtain the melting point.
5. Add 12.5 mL of solution W2 and 6.8 mL solution E2 to separate flasks and warm them both to ~80 ºC.
6. Add solution E2 to solution W2 and continue to heat for 10 minutes. Let the flask cool to room temperature and then cool further in the ice-water bath for 5 minutes then filter the solid product and scrape the product into a weigh boat to dry.
7. Obtain the melting point for all products.

Part E:

1. Put 0.3 g of the product made in Part A, 0.3 mL of 2-furaldehyde, 2 mL of ethanol, and 10 mL of distilled water in a 25 mL Erlenmeyer flask.
2. Warm the solution until homogenous and continue warming for 3 minutes (5 minutes total, max).
3. Let the flask cool to room temperature and then cool further in the ice-water bath for 5 minutes then filter the solid product and scrape the product into a weigh boat to dry.
4. Obtain the melting point.
5. Repeat the previous 4 steps from Part E using 0.3 g of the product formed in Part, 0.3 mL of cyclohexanone 2 mL of Ethanol and 10 mL of distilled water instead.