Kinetics Test Outline

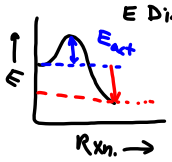
1. Rate of reaction- definition
2. Factors affecting rate (5)
3. kinetic-molecular theory (explains)
4. Potential E diagrams.
5. Experimental rate law.

Using KM theory to explain rate

Review questions

1. Why does cooling a reaction make it slower?
   - speed of particles
   - fewer collisions
   - fewer have activation E

2. E Diagrams

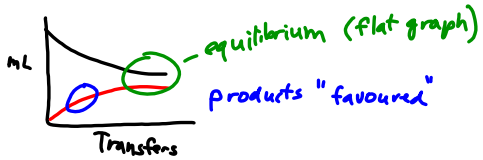


ΔH is negative

3.

Equilibrium Analogy

1. Rate of forward reaction decreases



5. Rate of reverse reaction also slows.
6. Neither reactants or products get used up, completely.

Equilibrium Constant Activity Calculations

Reaction: $Fe^{3+}_{(aq)} + SCN^-_{(aq)} \rightleftharpoons FeSCN^{2+}_{(aq)}$

1. Initial $[Fe^{3+}]$

a) Well D3 reference

$[Fe^{3+}] = 0.200 \times \frac{5}{10} = 0.100\ mol/L$

b) Well A1

4 drops 0.200 Fe^{3+}, 6 drops H_2O

$[\ ] = 0.200 \times \frac{4}{10} = 0.080\ mol/L$

Well C3 $0.080 \times \frac{5}{10} = 0.040\ mol/L$ diluting

c) Well A2

$0.080 \times \frac{4}{10} = 0.032\ mol/L$

Well D4 $= 0.032 \times \frac{5}{10} = 0.016\ mol/L$

d) Well A3 → E3 $0.0064 = [\ ]$

e) Well A4 → D2 $0.00256 = [\ ]$