Ex 32 - Kinetics refresher

Question One

From the data given, work out the rate law for the following overall reactions.

 $H_3C - Br + CH_3SH \rightarrow H_3C - SCH_3 + HBr$

| [CH ₃ Br] | [CH ₃ SH] | Rxn Rate |
|----------------------|----------------------|----------|
| 1.3 M | 1.3 M | 0.6 M/s |
| 1.3 M | 2.6M | 1.2 M/s |
| 0.65 M | 1.3 M | 0.3 M/s |



| [(CH ₃) ₃ CBr] | [CH ₃ SH] | Rxn Rate |
|---------------------------------------|----------------------|----------|
| 0.90 M | 1.3 M | 0.5 M/s |
| 1.8 M | 1.3 M | 1.0 M/s |
| 1.8 M | 2.0 M | 1.0 M/s |

Question Two

What is the rate law for the following overall reaction?



Question Three

Reaction A is faster than Reaction B for equal concentrations of reactants at the same temperature. What can you say about:

- The activation energy of Reaction A vs Reaction B.
 ΔG° of Reaction A vs Reaction B?

Question Four

Given the following elementary processes, determine the order of reaction and write the rate law.



Question Five

Given the results of Question One, determine which of the following mechanisms is consistent with which reaction and indicate what conditions may apply.

Mechanism One

1) H_3C -Br + CH_3SH \rightarrow H_3C $-SCH_3$ + HBr

Mechanism Two

