1. A chemical reaction has been characterized via a calorimeter and the following results were obtained:

   - Reaction order, $n$: 1.00
   - Onset temperature, $T_o$: 350 K
   - Final temperature, $T_f$: 500 K
   - Activation energy, $E_a$: 70 kJ/mol
   - Pre-exponential, $A$: $2 \times 10^7$ sec$^{-1}$

   What is the maximum temperature rate (K/s) and at what temperature does this occur (K)?