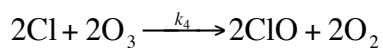
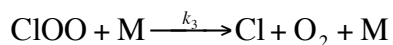
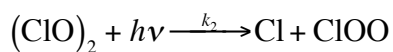
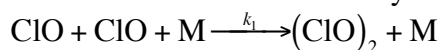


# CHEM 273 Atmospheric Chemistry

General Exam 2007

QUESTION. The ozone hole results from the unique chemistry and dynamics of the Earth's atmosphere.

- What is the ozone hole? When did it form?
- Describe the five steps required for the formation of the ozone hole. What would happen in the absence of particles?
- Write the *generalized* mechanism responsible for destruction of ozone by a catalyst "X". Name two catalysts that destroy ozone by this mechanism in the stratosphere.
- What class of *anthropogenic* compounds contributes to the ozone hole? Give an example.
- State the net reaction for the cycle below. What role does it play in the ozone hole?



Assuming that the concentrations of Cl, ClOO, and (ClO)<sub>2</sub> are in steady state, write an expression for the concentration of Cl in terms of the concentrations of ClO, O<sub>3</sub>, and M and the constants  $k_1$  and  $k_4$ . about the same as in polar regions, or more, or less, and why?