59. Write the rate laws for the following elementary reactions.

   a. $CH_3NC(g) \rightarrow CH_3CN(g)$
   b. $O_3(g) + NO(g) \rightarrow O_2(g) + NO_2(g)$
   c. $O_3(g) \rightarrow O_2(g) + O(g)$
   d. $O_3(g) + O(g) \rightarrow 2O_2(g)$
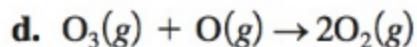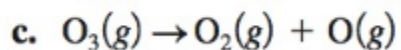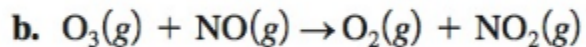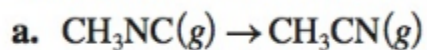
61. A proposed mechanism for a reaction is

$$C_4H_9Br \longrightarrow C_4H_9^+ + Br^- \qquad \text{Slow}$$
$$C_4H_9^+ + H_2O \longrightarrow C_4H_9OH_2^+ \qquad \text{Fast}$$
$$C_4H_9OH_2^+ + H_2O \longrightarrow C_4H_9OH + H_3O^+ \qquad \text{Fast}$$
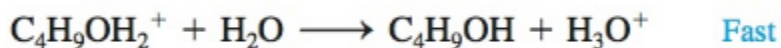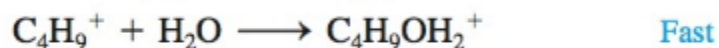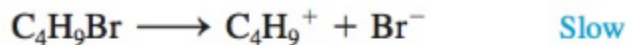
Write the rate law expected for this mechanism. What is the overall balanced equation for the reaction? What are the intermediates in the proposed mechanism?