1. (6 pts) Answer the questions that follow for the potential energy diagram shown below.

   a) This reaction is most likely:
      \[ S_{N1} \quad S_{N2} \quad E1 \]

   b) How many steps are in this reaction:
      1 \quad 2 \quad \text{cannot be determined}

   c) The rate expression is most likely, rate =
      \[ k[RX] \quad k[RX][\text{Nuc:}] \quad k[\text{Nuc:}] \]

2. (2 pts) Circle the alkyl halide that will produce the most stable carbocation in an E1 reaction.

   ![Chemical structures]

3. (2 pts) For the topic of S\(_{N1}\) vs S\(_{N2}\), your course text uses an analogy. Write the letter of the analogy used on the line: ______. (Do not circle your answer.)

   a = cars entering and exiting a freeway
   b = water flowing through a pipe
   c = musical chairs
   d = students entering and exiting a classroom
   e = flour passing through a sifter
   f = people getting on and off a subway car