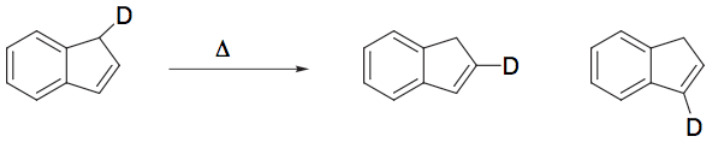
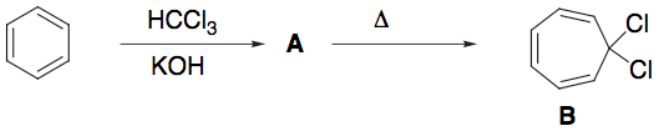
PS 5, 2005
CHEM 332

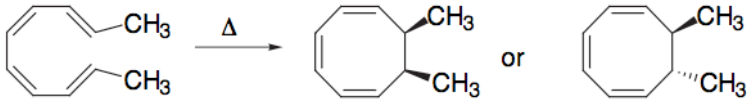
1. Provide a mechanism



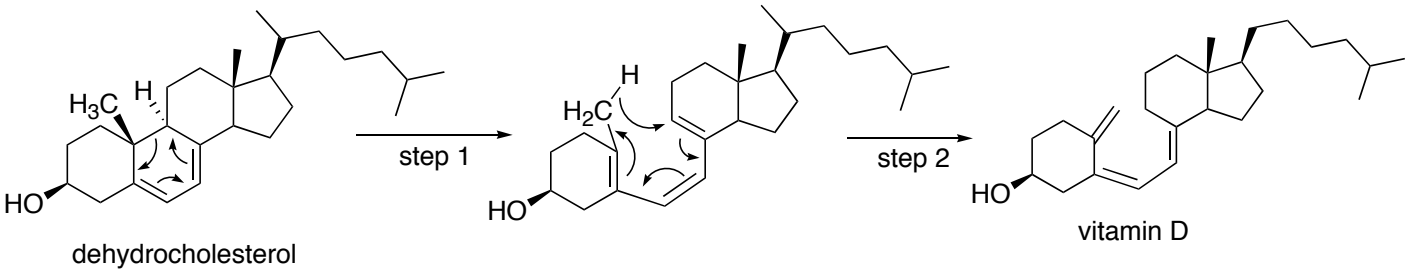
2. Provide a structure for **A** and a mechanism for the conversion to **B**



3. Circle the product, and explain using your knowledge of molecular orbitalsof the following transformation



4. Biochemically, vitamin D is made from dehydrocholesterol by sequential electrocyclic ring opening and a 1,7-sigmatropic shift as shown below.



dehydrocholesterol

vitamin D

a. Is step 1 photochemical or thermal? Explain in detail using molecular orbital arguments.
b. We discussed in class that 1,5 sigmatropic hydride shifts are allowed, but that 1,3 hydride shifts are not allowed. Step 2 is a 1,7 sigmatropic hydride shift. Explain why this step is allowed (this is a challenging question)