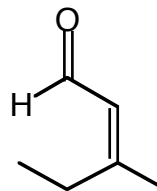
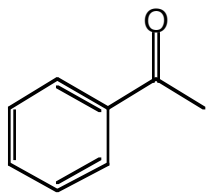
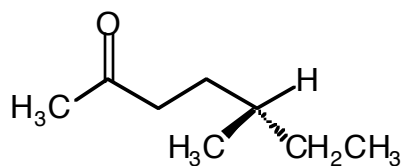


1. Provide an unambiguous name (IUPAC or common) for each of the following molecules. (15 points)



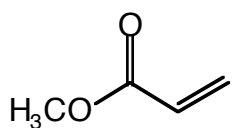
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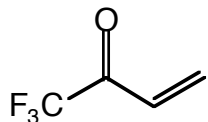
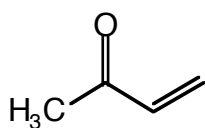
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2. For each pair of molecules below, circle the one that is *more reactive* towards conjugate addition by a weakly basic nucleophile. Draw pictures that illustrate your point and provide a concise explanation for your decisions in the space provided to the right. (10 points)

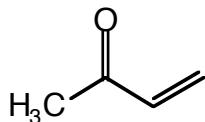
Explanation



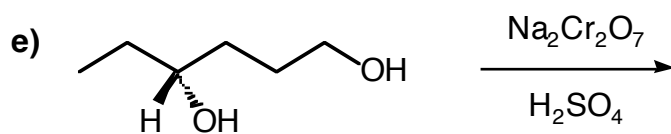
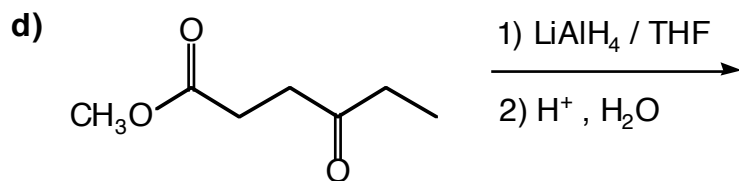
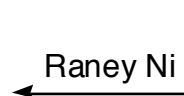
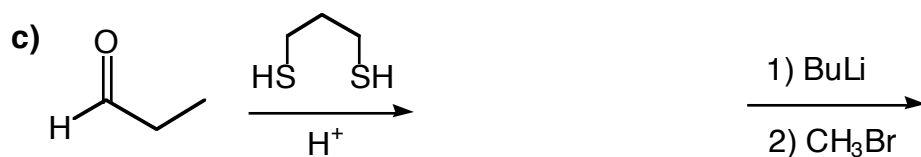
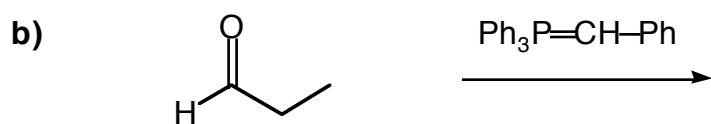
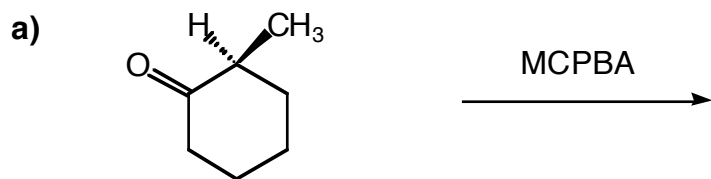
vs

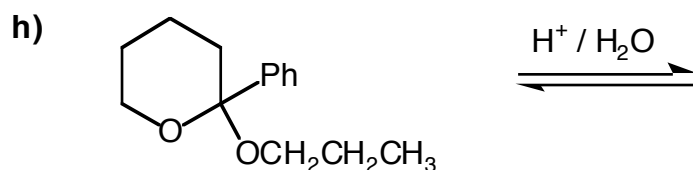
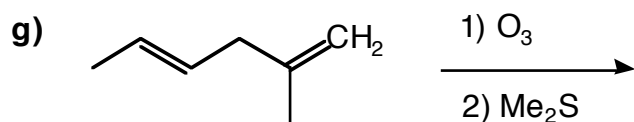
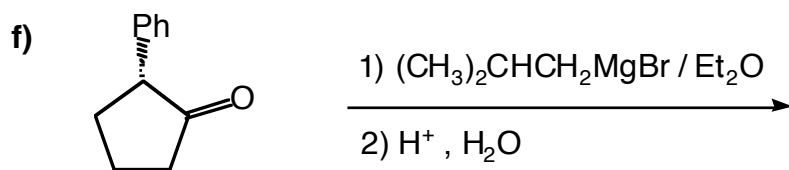


vs

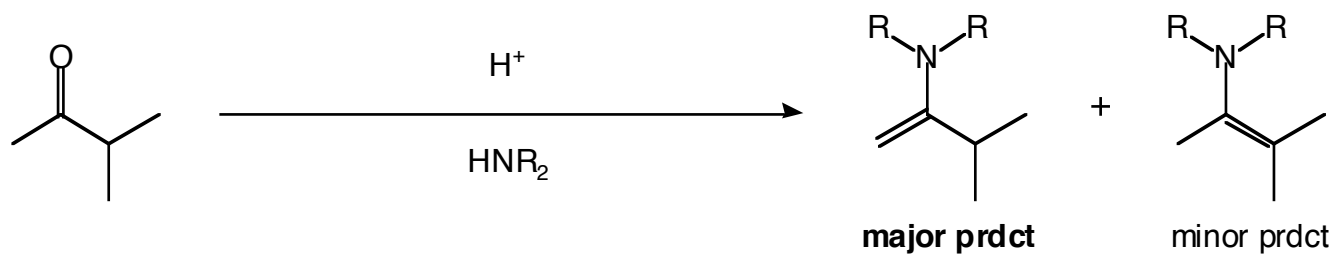


3. Provide the major product(s) for the following reactions. In all cases, assume multiple equivalents of reagents. Circle your final answers. (45 points)





4. In lecture, we had discussed the formation of enamines and deduced that the more substituted double bonds are favored. After some literature research, I discovered that this is incorrect! It is the *less substituted* alkene that is favored. Draw the mechanism for the formation of the major product below and explain why the less substituted alkene is favored. (14 points)



5. Provide a synthesis for each of the following transformations. For full credit, be sure to draw all intermediary products along the way. (16 points)

