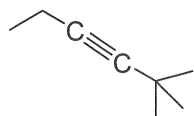
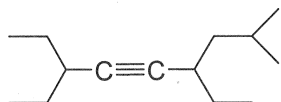


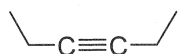
1) Name.



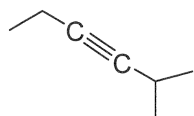
2,2-dimethylhex-3-yne



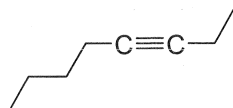
3,6-diethyl-8-methyl-non-4-yne



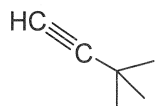
hex-3-yne



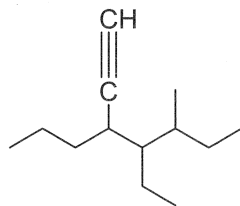
2-methylhex-3-yne



Oct-3-yne

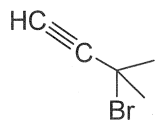


3,3-dimethylbut-1-yne

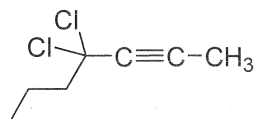


4-ethyl-5-methyl-3-propylhept-1-yne or -1-heptyne

4-ethyl-5-ethynyl-3-methyloctene



3-bromo-3-methylbut-1-yne



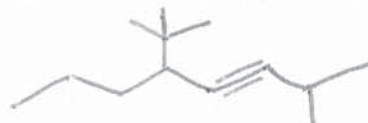
4,4-dichlorohept-2-yne

2) Draw the structures.

3,3-dimethyl-4-octyne



2,2,5,5-tetramethyl-3-hexyne

3-*sec*-butyl-1-heptyne  
(recall: *sec* = secondary)5-*tert*-butyl-2-methyl-3-octyne  
(recall: *tert* = tertiary)

4,4-dimethyl-2-pentyne



Editted \_\_\_\_\_

5-ethyl-2,5-dimethyl-3-heptyne



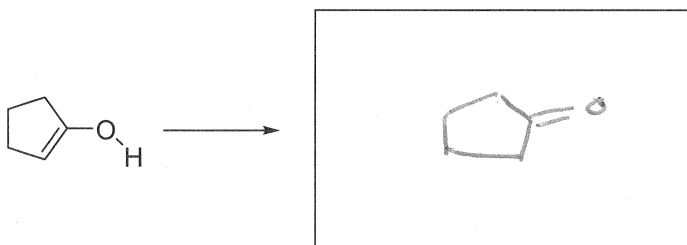
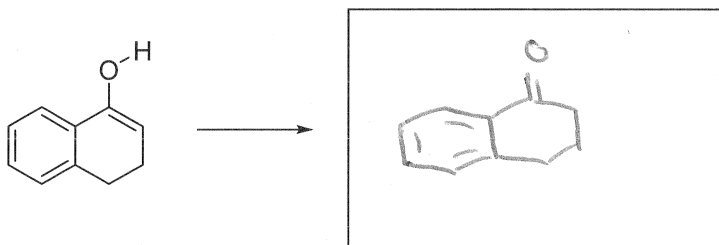
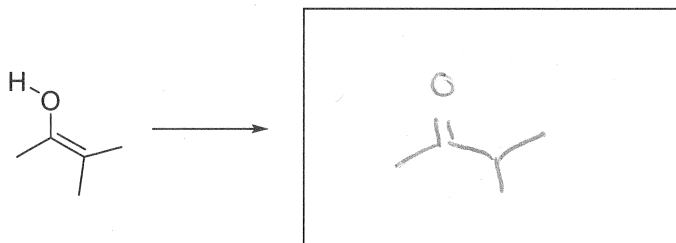
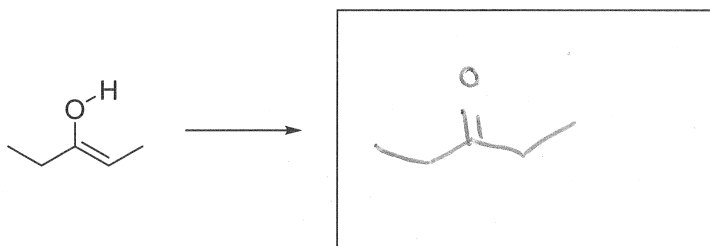
2-heptyne



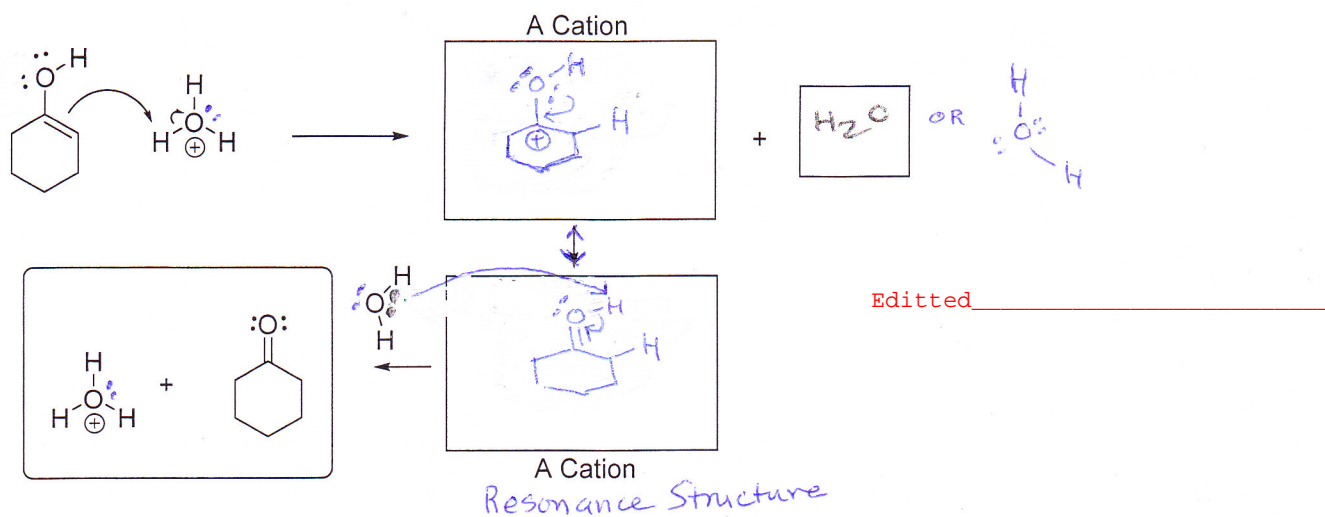
2,2-dimethyl-4-octyne



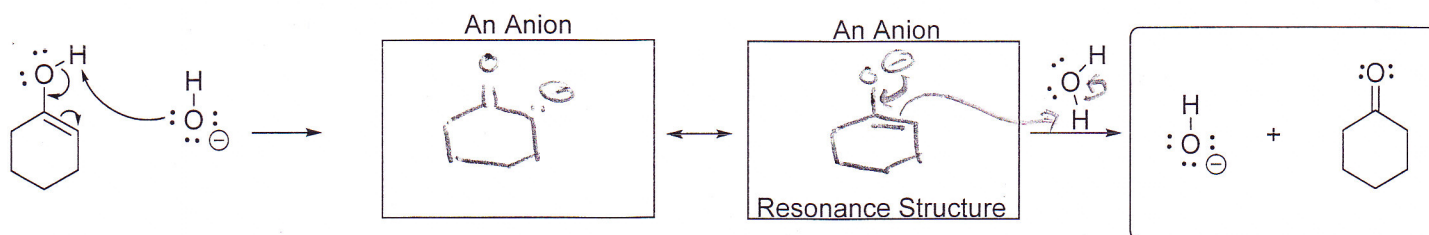
3) Draw the ketone tautomer of each enol present under slightly acidic conditions.


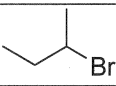
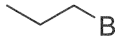
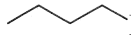


4) Complete the mechanism for the acid-catalyzed tautomerization reaction. Use curved arrows ( $\curvearrowright$ ) where necessary to show movement of electrons. Fill-in the empty boxes.



5) Complete the mechanism for the base-catalyzed tautomerization reaction. Use curved arrows ( $\curvearrowright$ ) where necessary to show movement of electrons. Fill-in the empty boxes.

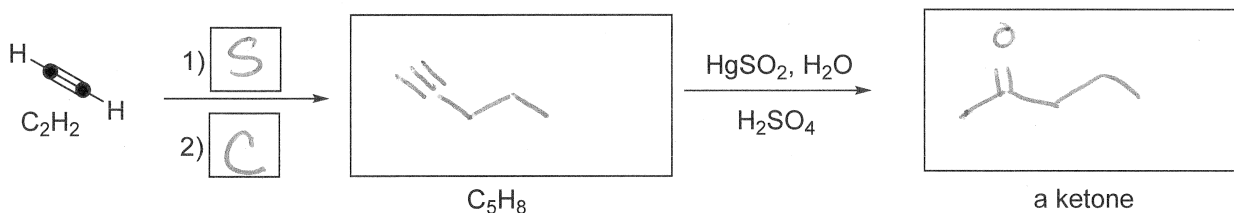
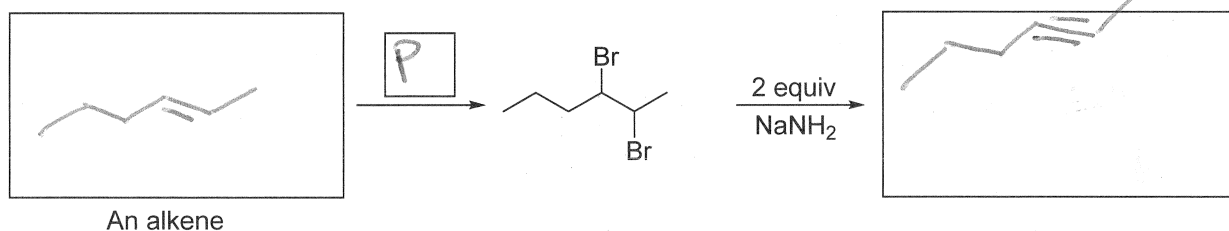
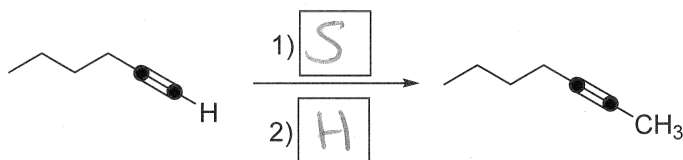
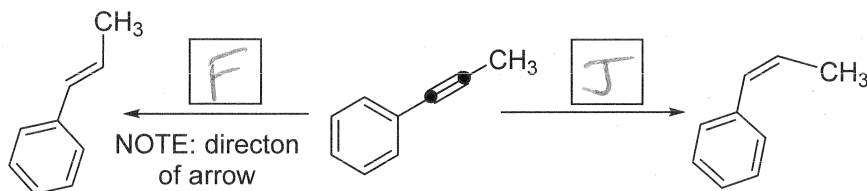


(A) 	(B) 	(C) 	(D) 
(E) HBr	(F) Na or Li metal in NH <sub>3</sub> (liquid)	(G) HCl	(H) CH <sub>3</sub> Br
(I) 1) Hg(OAc) <sub>2</sub> , H <sub>2</sub> O 2) NaBH <sub>4</sub>	(J) H <sub>2</sub> , Lindlar catalyst	(K) excess H <sub>2</sub> , Pd/C	(L) H <sub>2</sub> O, H <sub>2</sub> SO <sub>4</sub> , Heat (dehydration cond'ns)
(M) 1) OsO <sub>4</sub> 2) NaHSO <sub>3</sub> , H <sub>2</sub> O or NMO	(N) KMnO <sub>4</sub> , H <sub>3</sub> O <sup>+</sup>	(O) Br <sub>2</sub> , excess H <sub>2</sub> O	(P) Br <sub>2</sub> (in CH <sub>2</sub> Cl <sub>2</sub> solvent)
(Q) 1) BH <sub>3</sub> , THF 2) HO <sup>-</sup> , H <sub>2</sub> O <sub>2</sub> , H <sub>2</sub> O	(R) 1) O <sub>3</sub> , -78 C 2) Zn, acetic acid, H <sub>2</sub> O	(S) excess NaNH <sub>2</sub> (in NH <sub>3</sub> solvent)	(T) Br <sub>2</sub> , excess CH <sub>3</sub> OH
(U) HIO <sub>4</sub>	(V) CHCl <sub>3</sub> , KOH (base)	(W) H <sub>2</sub> O	(X) Cl <sub>2</sub> (in CH <sub>2</sub> Cl <sub>2</sub> solvent)
(Y) H <sub>2</sub> O, H <sub>2</sub> SO <sub>4</sub> , HgSO <sub>4</sub> (room temp)	(Z) MnO <sub>2</sub> (in THF solvent)	(AA) CH <sub>2</sub> I <sub>2</sub> , Zn(Cu)	(BB) H <sub>3</sub> O <sup>+</sup> (mild addition cond'ns)
(CC) NBS, <i>hν</i> <i>N</i> -bromosuccinimide	(DD) <i>m</i> -chloroperoxybenzoic acid ( <i>m</i> CPBA)	(EE) Br <sub>2</sub> (in CCl <sub>4</sub> solvent)	

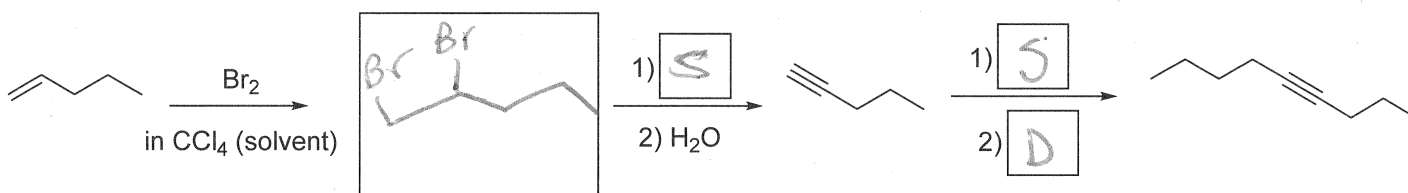
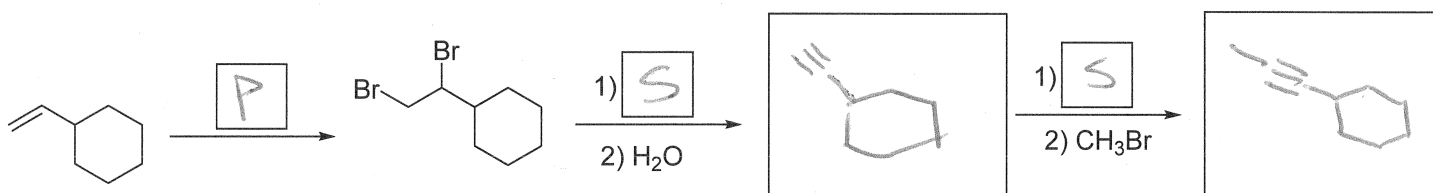
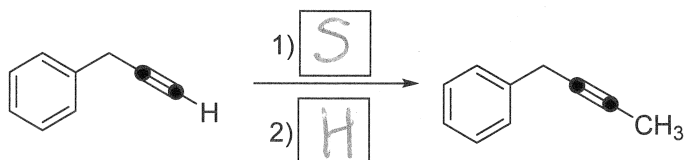
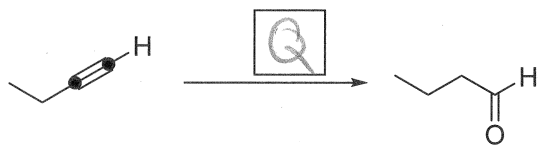
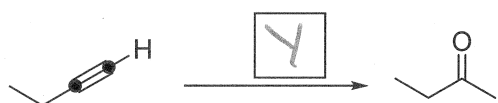
Fill in the blanks below with either of the following: (A letter can be used more than once)

--small boxes: a letter corresponding to a reagent (Table above)

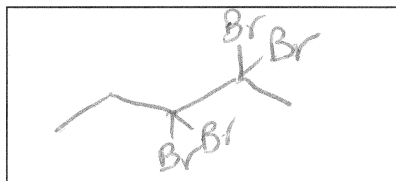
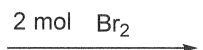
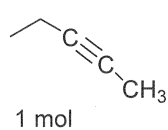
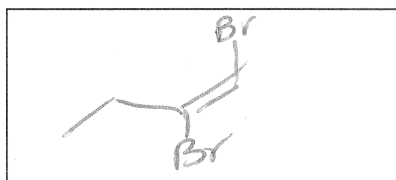
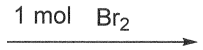
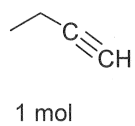
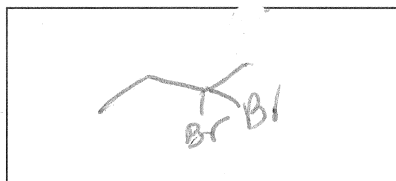
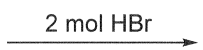
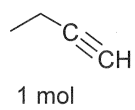
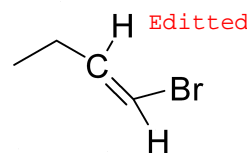
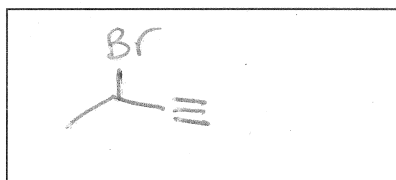
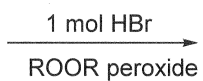
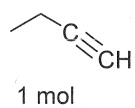
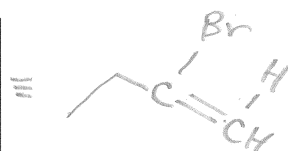
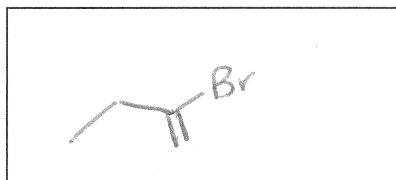
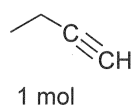
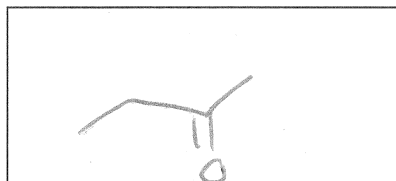
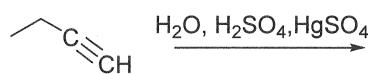
--rectangles: a reaction pathway intermediate

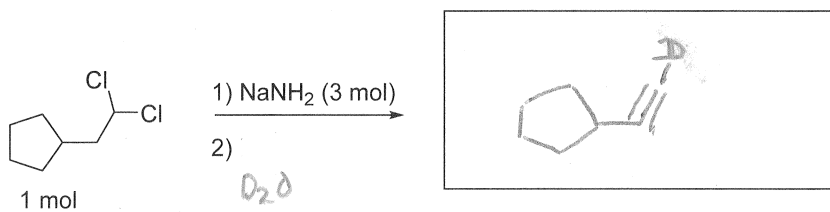
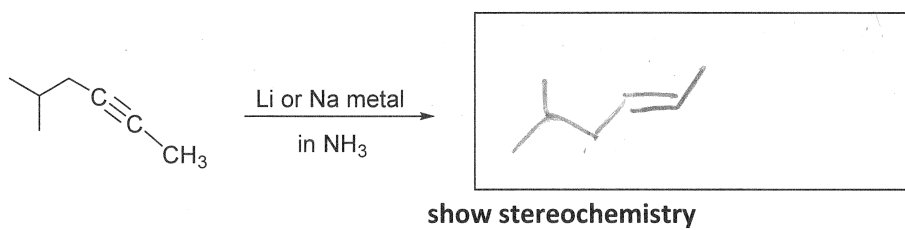
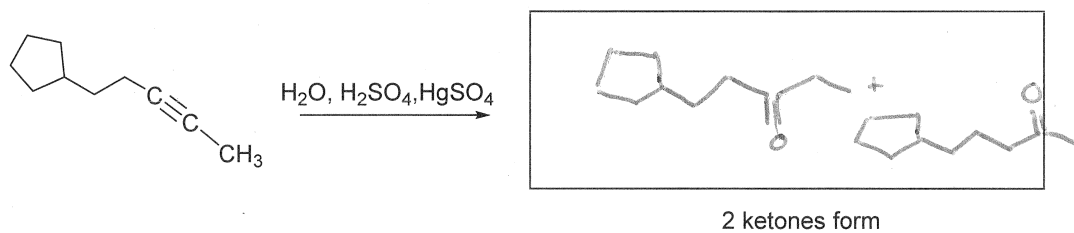
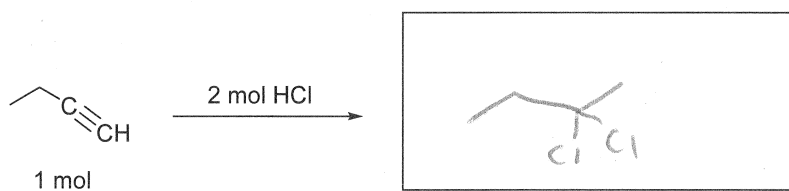
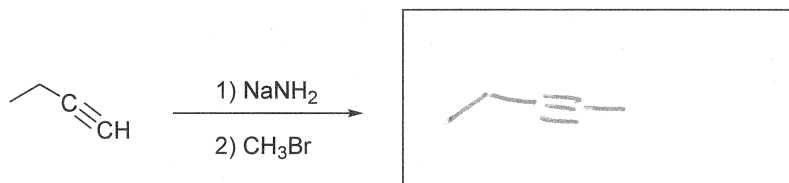
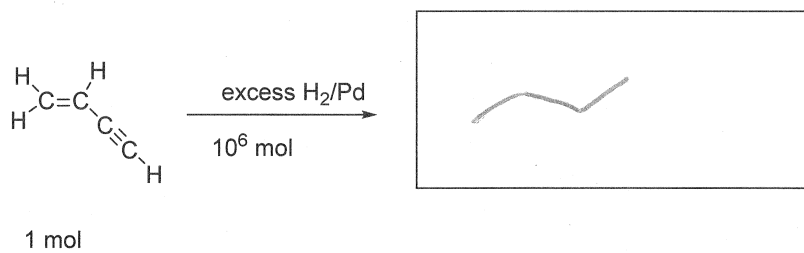


continued on next page



6) Predict the products of the following reactions.

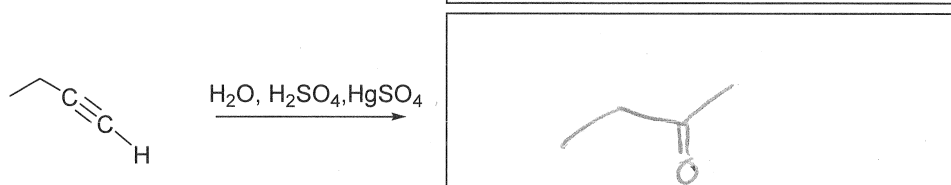
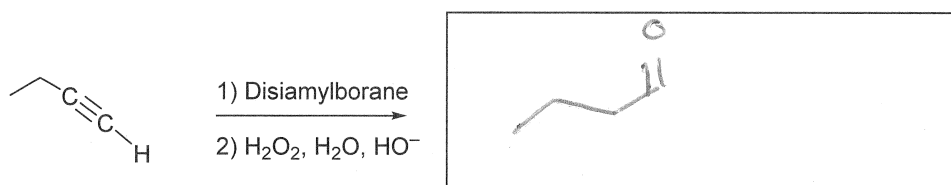
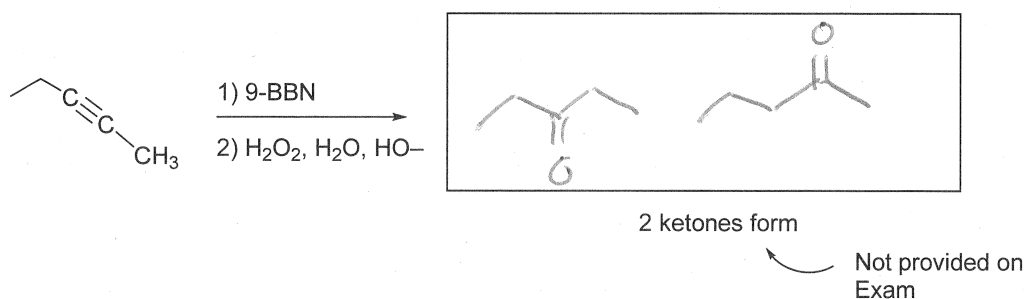




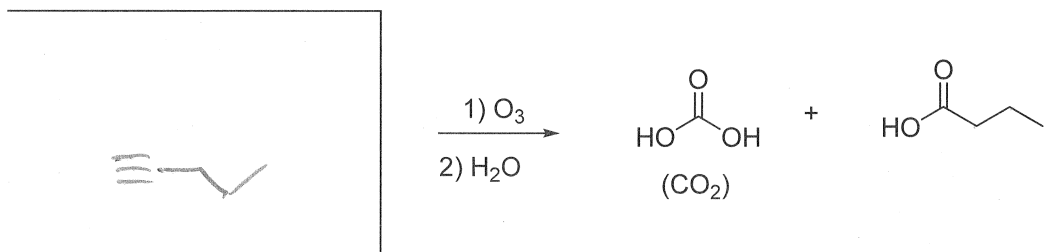
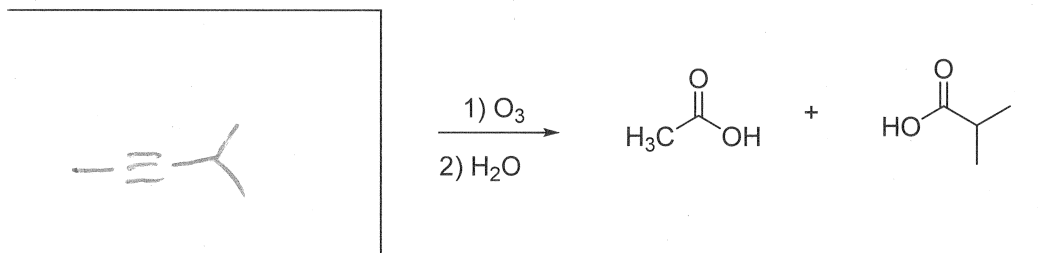


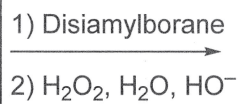
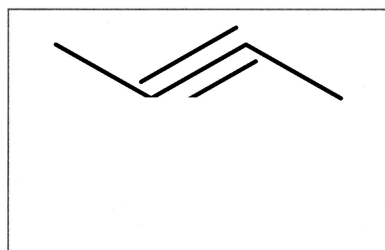
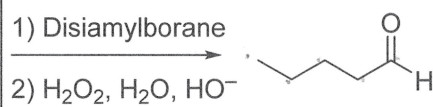
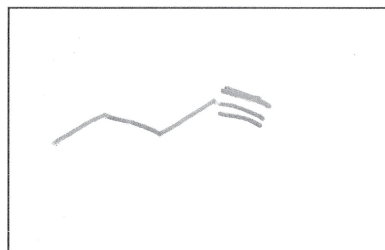
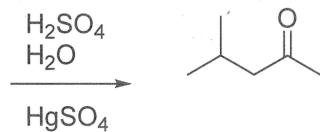
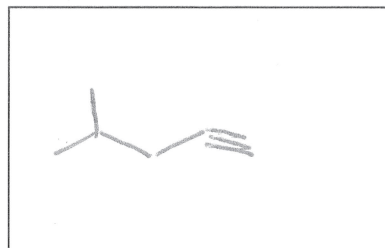
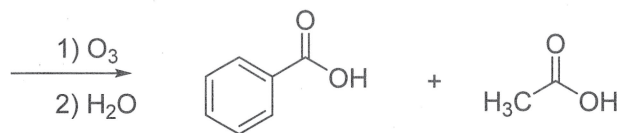
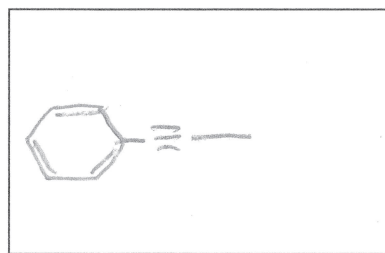
7) Draw the MAJOR product for the following.

NOTE: Disubstituted Boranes (9-BBN or Disiamylborane) are used with alkynes to prevent the addition of a boron atom to each  $\pi$ -bond of the alkyne.



8) Draw the alkyne reactants.





Only product

