

Chem 108A Alkene Reaction worksheet - Chapter 8

1. Predict the product(s) of the reaction of 2-butene with reagents (a) through (q).

- (a) HBr, Ether (b) Cl₂, CH₂Cl₂ (c) 1. O₃; 2. Zn, H₃O⁺ (d) I₂, H₂O
 (e) 1. BH₃, THF; 2. H₂O₂, NaOH (f)* 1. Hg(OAc)₂, THF/H₂O; 2. NaBH₄
 * Alternate reagents to "H₂O, H₂SO₄ (cat.)"
 (g)** 1. OsO₄; 2. NaHSO₃, H₂O (h) H₂, Pd/C
 ** Alternate reagents to "OsO₄, NMO"
 (i) RCO₃H (mCPBA) (j) KMnO₄, H₃O⁺ (k) reagent (i) then H₃O⁺
 (l) reagent (g) then HIO₄, H₂O (m) reagent (a) then KOH

Repeat the same reactions (reagents a-m) for the following compounds, indicating relative stereochemistry where appropriate.

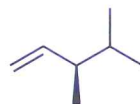
2.



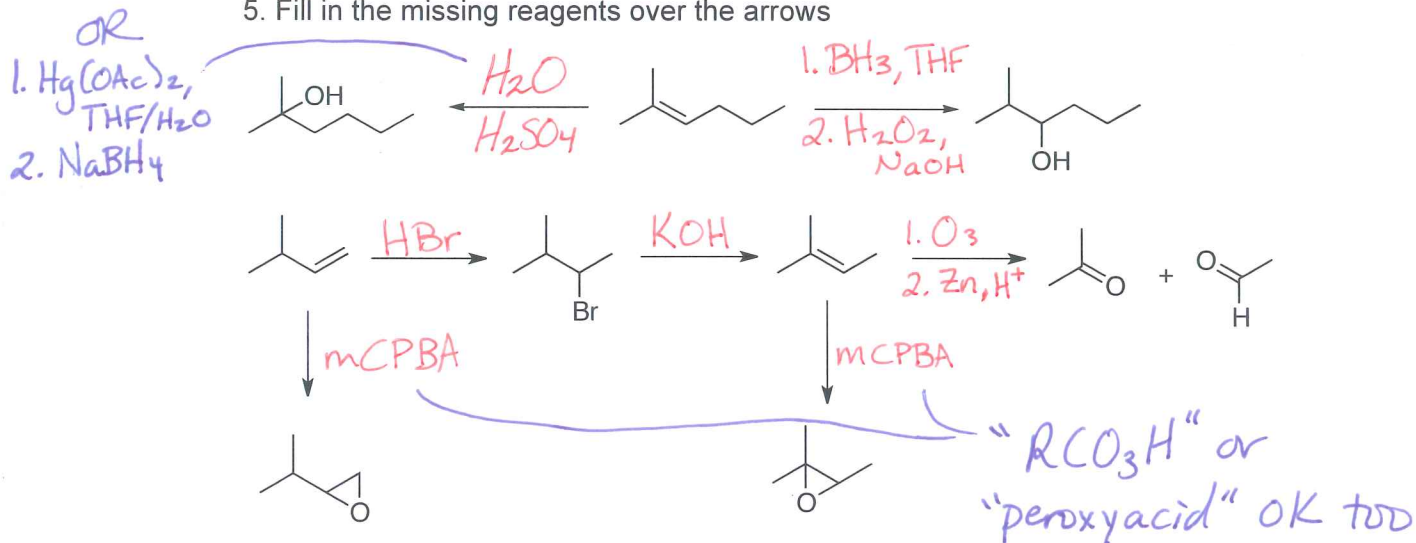
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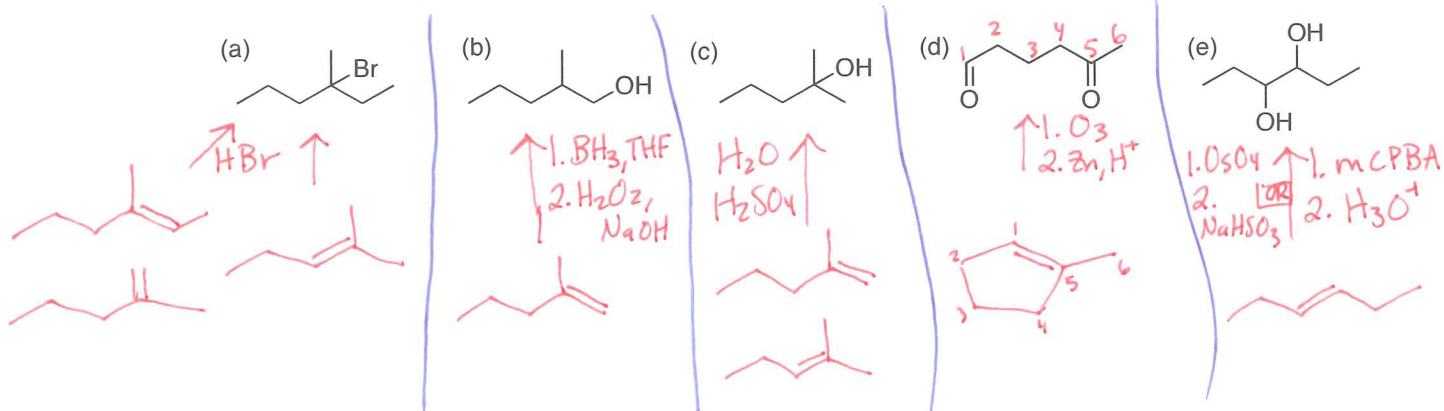
4.



5. Fill in the missing reagents over the arrows



6. Draw the possible alkene(s) and reagents needed to synthesize the following compounds.





HBr
 Cl₂
 O₃
 I₂/H₂O
 1. BH₃...
 2. H₂O₂...
 1. H₂OAc₂, H₂O...
 2. NaBH₄
 OsO₄...
 H₂, Pd/C
 mCPBA
 KMnO₄, H⁺
 1. mCPBA,
 2. H₃O⁺
 OsO₄...
 then
 HIO₄...

1a	2a	3a	4a *
1b	2b *	3b *	4b *
1c	2c	3c	4c
1d	2d *	3d either	4d either
1e	2e	3e *	4e
1f	2f	3f	4f *
1g	2g	3g *	4g *
1h	2h	3h	4h
1i	2i	3i *	4i *
1j	2j	3j	4j
1k	2k *	3k *	4k *
1l	2l	3l	4l

* = several stereoisomers possible.
 Only one shown