**exercise #2:**

*Review of the`full Monty’ of alkene reactions*

 **Organic Chem II Alfred State College**

1. Fill in the reagent(s) and conditions for converting 2-methyl-2-hexene to each of the products below:

H2/1 atm

Pt, Pd or Ni



CCl4/HOOH

HCl in acetic acid, no HOOH

CHCl3/OH-

Cl2/wet CCl4

HCl in acetic acid/ HOOH

1. Fill in the missing boxes involved in the conversions of isobutylene below:

~100% anti-Markovnikoff



Brown two step

B2H6 (diborane) neat





Ozonolysis

CH2I2 Zn(Cu)

(Simmons-Smith reaction)

1. Provide examples of three different pathways leading to cyclo compounds

 Zn-Cu amalgam/ether

a) ethene + CH2I2 ------------🡪 cyclopropane Simmons-Smith reaction



 OH-

b) ethene +CHCl3 ---------------🡪 carbene insertion

 light

c) ethene + CH2N2 -----------🡪 c yclopropane + N2 diazomethane carbene insertion

 wet CCl4 OH-



d) ethene + Br2 -----------🡪------------------🡪 halohydrin route to epoxide

1. There are two alternative routes to make anti- versions of 1,2-dihydroxyethane from ethene. What are they ?

Formic acid/peroxide

a) ethene -------------------🡪

 wet CCl4 OH- H+

b) ethene +Br2-----------🡪 ---------------------🡪-----------------🡪

b)

1. There are two different choices of reagents leading to syn-versions of 1,2-dihydroxyethane from ethene. What are they ?

a) KMnO4 cold

b) OsO4 in ether

6. What is the industrial route for converting ethene to ethanol ?



 Conc H2SO4  H2O

Ethene ---------------🡪 ethyl sulfonate ------------🡪ethanol + H2SO4



NaBH4 in KOH



 7.



1. What alkene originally was present if the final product of ozonolysis is:

