**HOMEWORK ASSIGNMENT #1 ORGANIC CHEMISTRY II \_\_\_/26 pts**

(due Wed 1 Feb 2017)

 Your name:\_\_\_\_\_\_\_\_answers\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 1 pt

1. Suggest a simple, one step route to the polymer: (CH2-CHCl)n, (2 pt)

 HO-OH/light

n CH2=CHCl (CH2-CHCl)n with OH end marker (see below)

 radical polymerization



 …… etc

1. If the substituted alkenyl halide, CH2=CHCl is treated with Br2 in wet CCl4, predict the most likely product. (Make sure to draw the structure explicitly with expected addition group orientation) (2 pt)



*Br attaches to side with Cl in intermediate carbocation preferentially to avoid placing it near the electronegative Cl, which destabilizes a carbocation*



1. Provide a simple, 1 or 2 step pathway to the compound shown to the right:

(2 pts)



 Product

**4.) Fill-in the boxes (11 pts)**



a)2-methyl-2-pentene also possible here

 acetic acid



 no peroxide

 + HBr *2***-bromo-2-methylpentane**

 Could have also brominated 2-methyl-2-pentanol

b)  Br2 CCl4/wet

2-methyl-2-pentene +

 **3-bromo-2-methyl-2-pentanol**





c)

 OsO4

 **syn or anti? (circle choice)**

2-methyl-2-hexene

 1 pt 1 pt

d)

 HOOH

 n CHCl=CHCl light

 **{-CH-CH-}n**

 **| |**

 **Cl Cl**

 **B2H6 H2O2/OH-**

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e) **1-pentanol exclusively (>90% yield)**

 **\_\_\_/17**

**Classify the reactions written below into one of the alkene reaction categories: (5 pts)**

1. Carbocation based addition (C+)
2. Bridgehead (halohydrin) addition (B)
3. Radical-based addition ( R )
4. Organometallic/redox based addition (O/R)
5. Specials (=SP=ozonolysis and allylic substitution)

**C+ (1)**

1. Conc H2SO4 + ethylene, then H2O 🡪 ethanol \_\_\_\_\_\_\_
2. NBS + isobutylene 🡪 3-bromo-2-methylpropene \_\_\_\_R\_or SP\_\_(3 or 5)



1. CHCCl3 with OH- + 2,3-dimethyl-2-butene🡪 \_\_R\_\_\_\_(3)
2. Anti-2,3-dibromobutane forms \_\_\_B\_\_\_(2)
3. Anti-diol formed \_\_\_O/R\_\_\_(4)

**Suggest three different ways to make 2-butene (3 pts)**

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**\_\_\_/8**