**HOMEWORK ASSIGNMENT 9 ORGANIC CHEMISTRY I**

(due Wednesday 16 Nov 2016)

Your name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 1 pt \_\_\_/20 pts

**9.1. Pathways to specific alkenes (2 pts each/ 8 pts total)**

1. Suggest a simple, 1-step route to Z-4-methyl-2-pentene
2. Suggest a simple, 1-step route to E-4-methyl-2-pentene
3. What is the major product-if any- obtained by attempting to dehydrate 2,2,4,4-tetramethyl-3-pentanol ?
4. Is it possible to synthesize an alkene via dehydrohalogenation of 3-bromo-2,2,4,4-tetramethylpentane ? If yes, what are the likely product(s) ?

**9.2. Parsing E1 vs E2 characteristics (11 pts)**

Assuming that by E1 we refer to the mechanism of alcohol dehydration to alkenes and by E2 we refer to the mechanism of dehydrohalogenation of alkyl halides to alkenes, circle which of these two mechanisms the various reaction properties below are connected to (can be both) 1 pt each

1) Primary H effect E1 E2

2) H+ catalyzed E1 E2

3) Rearrangements occur E1 E2

4) Base driven E1 E2

5) β-H always necessary E1 E2

6) Products obey Saitsev rule E1 E2

7) Reaction rate order: 3o>2o>1o  E1 E2

8) Involves a carbocation E1 E2

9) Involves a 4-atom electron flow E1 E2

10) More than one product alkene possible E1 E2

11) Competes with substitution reaction E1 E2