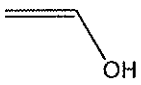
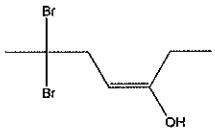
In-Class Exam III: Organic Chemistry I Alfred State College _____/51 pts
Wed 12 December 2013

Your Name: _____answers_____

3.1. Nomenclature of Alkenes (4 pts)

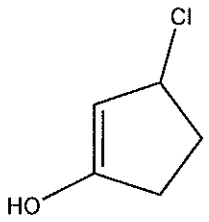
Name or draw the compounds below using IUPAC rules unless otherwise indicated. If necessary, make sure to indicate whether the structure is E or Z



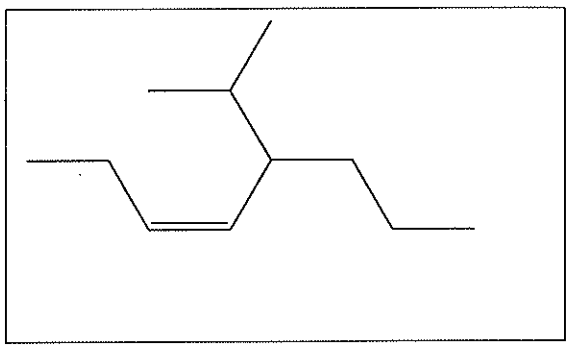


ethenol
(1-ethen-1-ol
Ethen-1-ol reluctantly accepted too

E-6,6-dibromo-3-hepten-3-ol



3-chloro-1-cyclopentenol



Z-5-(1-methylethyl)-3-octene

3.2. Match-Maker Chemistry (8 pts)

Match the 8 items on the left with the most pertinent descriptor in the list on the right
(Several in the list below are not used.)

test reagent for alkenes	h	a) makes halohydrins
2)reagents to make E-only alkene	g	b) E1
3)necessary for anti-Mark. addition of HBr across C=C	j	c)requires beta H
4)Br_2/H_2O in CCl_4	a	d) ether (dry)
5) dehydrohalogenation of alkyl halides	c	e) carbocation mechanism
6) Markovnikoff additions across C=C	e	f) NBS (N-bromosuccinimide)
7)reagent needed for allylic substitution of Br on alkene	f	g)NH_3 (l) and Na°
8) mechanism for dehydration of alcohols	b	h)$KMnO_4$ (in CH_2Cl_2 cold)
		i) Pd black and H_2
		j) peroxides (H_2O_2)
		k) S_N2

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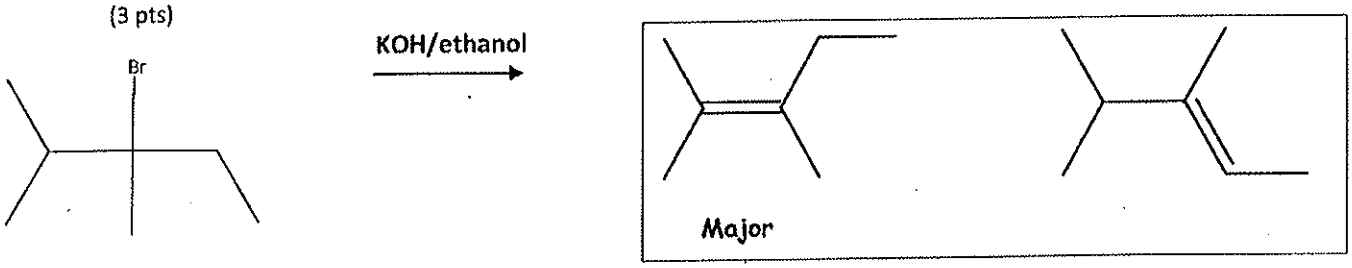
3.3 Eliminating Snacks (12 pts/ 2 pt per completely correct line)

(CIRCLE) for both the dehydration and dehydrohalogenation *menus*, the effect of the listed variations on the rates on these two reaction types. (n/a means not applicable)

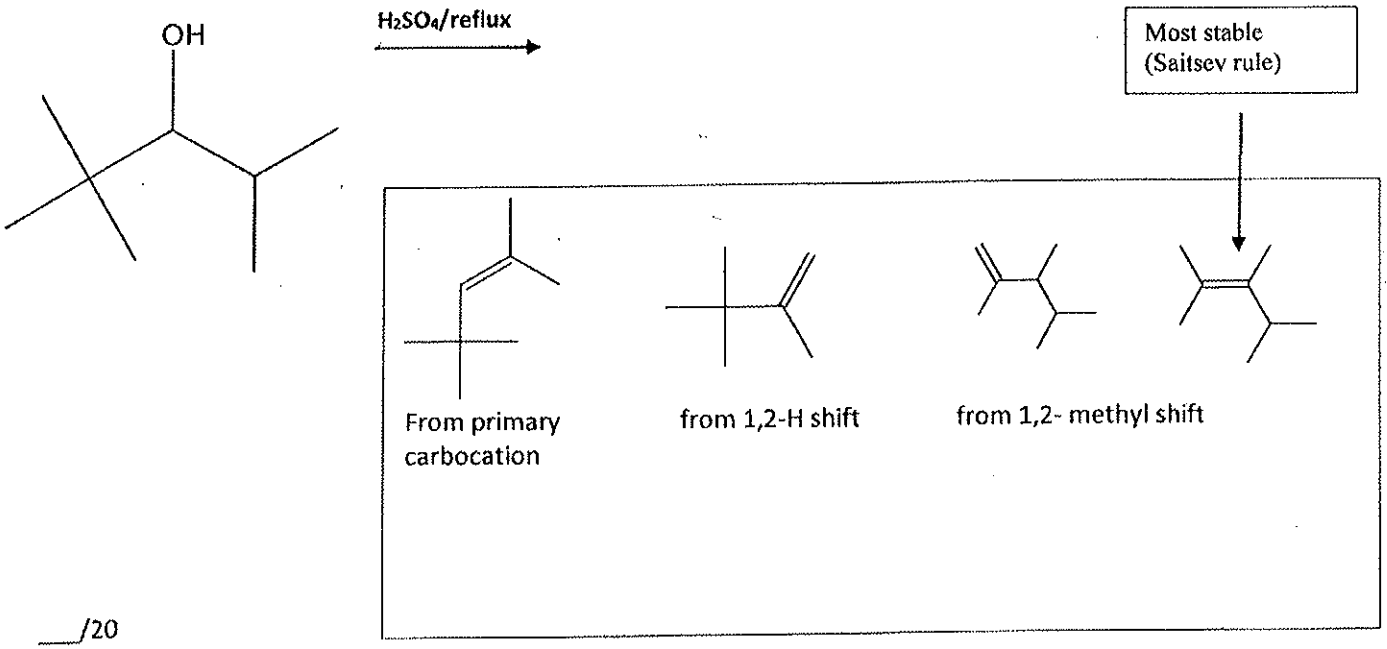
variation	effect on dehydration rate	effect on dehydrohalogenation rate
1) substrate concentration up	*up* n/a down	*up* n/a down
2) OH^- concentration increased	*up* n/a down	*up* n/a down
3) Rearrangement occurs	*yes* no	yes *no*
4) Primary H effects occur	*yes* no	*yes* no
5) Reaction can occur without βH	*yes* no	yes *no*
6) dominant reaction mechanism	*E1* E2 S_N1 S_N2	*E1* E2 S_N1 S_N2

3.4 Soothsaying (8 pts)

Predict all the possible (=can form) alkenes possible from the reaction shown below and **CIRCLE** the **major product** (3 pts)



Predict all the possible alkenes possible (= can form) from the reaction below and **CIRCLE** the **most stable product**: (5 pts)



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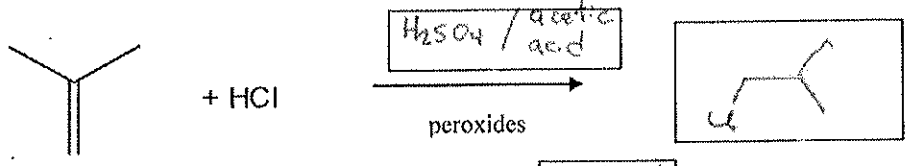
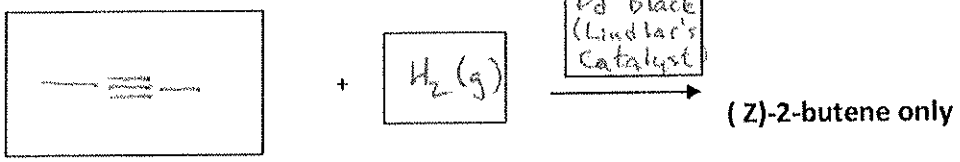
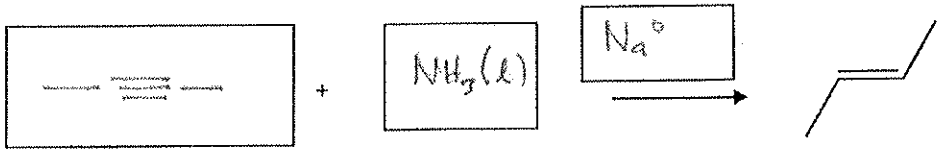
3.5 BOXES, LITTLE BOXES (19 points total/ 1 pt each)

Fill in the reagents, products, solvents and/or conditions missing in the reactions below:

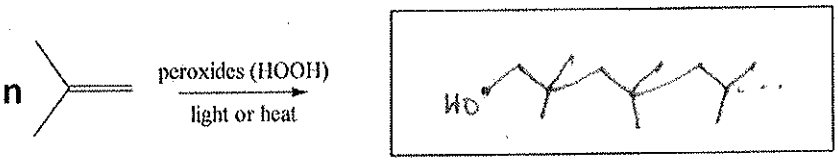
1) 

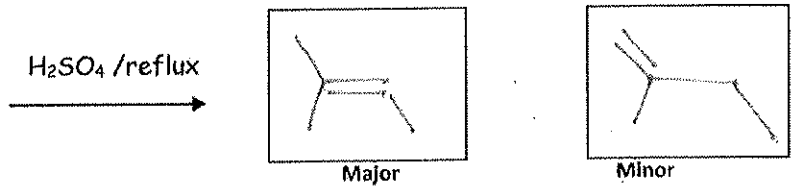


(Z)-2-butene only

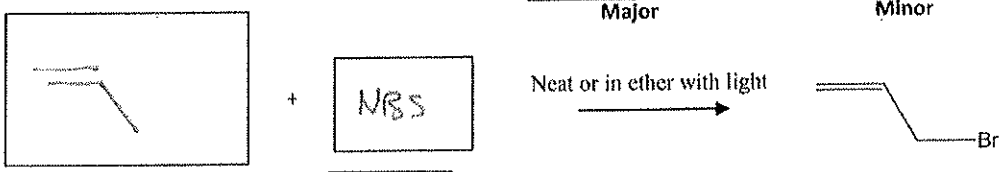
3) 

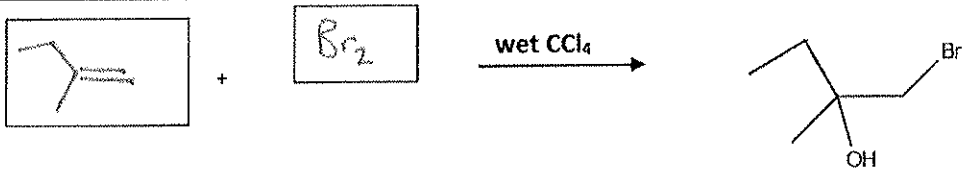
E-Only product

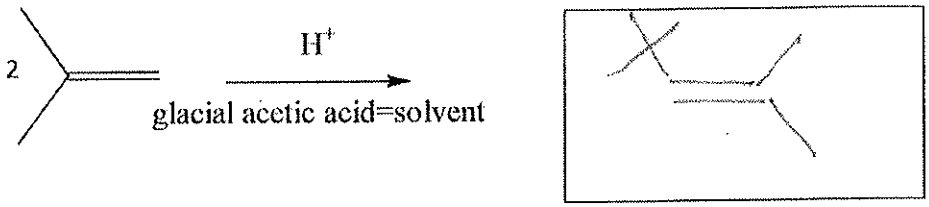
4) 

5) 2,2-dimethyl-1-propanol 

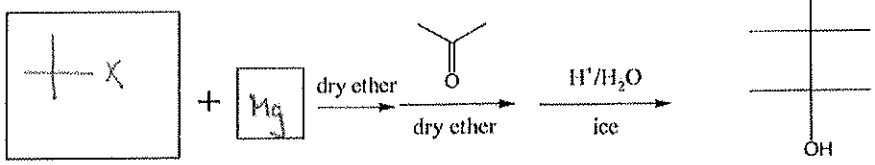
from 1,2 methyl shift

6) 

6) 

7) 

major only

___/19 

X = Br, Cl, I ...