

Student ID _____

Name _____

TA Name _____

page

points:

KEY

2 _____ (21)

3 _____ (15)

4 _____ (16)

5 _____ (19)

6 _____ (16)

7 _____ (13)

Total _____ (100)

Periodic Table

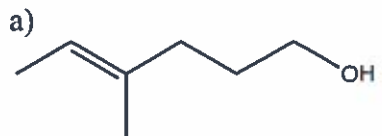
H																		He
Li	Be											B	C	N	O	F		Ne
Na	Mg											Al	Si	P	S	Cl		Ar
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br		Kr
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I		Xe
Cs	Ba	La	Ha	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At		Rn
Fr	Ra	Ac																

Please sit with an empty seat between you and your neighbors.

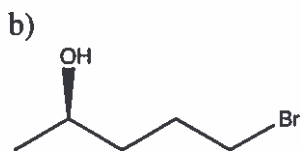
Unless specifically asked, you do not have to draw mechanisms for reactions.

Feel free to ask questions about the questions, but please don't ask questions about your answers, it distracts your neighbors.

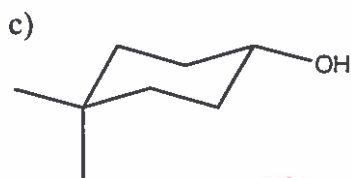
1. Provide the IUPAC name for each of the following compounds (3 pts each).



(E)-4-methylhex-4-en-1-ol



(R)-5-bromopentan-2-ol



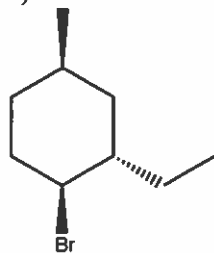
4,4-dimethylcyclohexanol

2. Provide the corresponding pKa values for the following species. (3 pts)

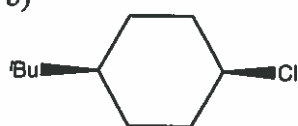
	pKa
EtOH	16
Bu-H	55
PrSH	10
Et ₂ NH	35

3. Draw the most stable conformation of the following structure. (3 pts each)

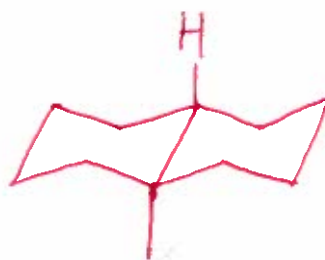
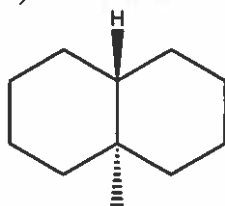
a)



b)

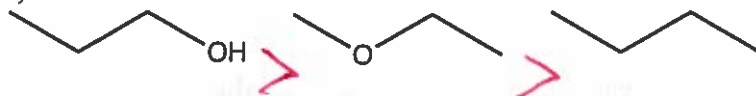


c)



4. Rank the boiling points of the following species from high to low. (3 pts each)

a)

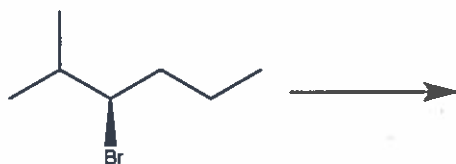


b)



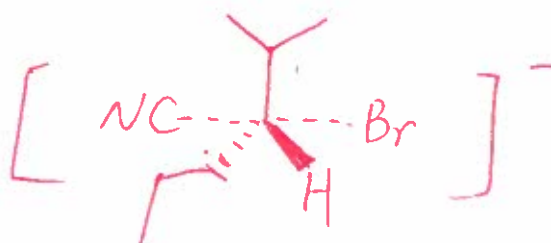
5. In the following conditions, indicate which mechanism(s) (e.g., S_N1 , S_N2 , E1, E2) is favored.

a) (2 pt each)

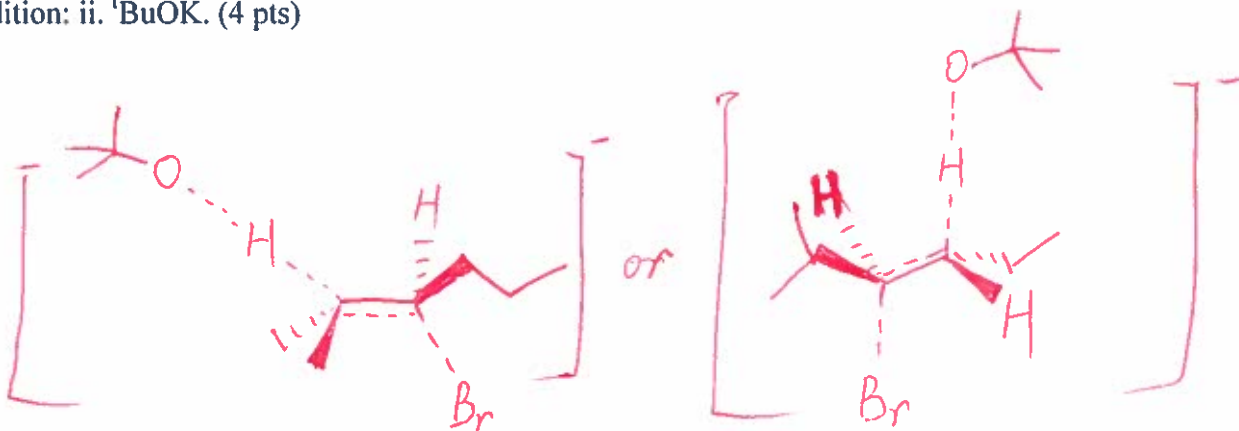


- i. NaCN S_N2
- ii. t BuOK $E2$
- iii. EtOH, heat $S_N1 + E1$
- iv. EtONa $S_N2 + E2$

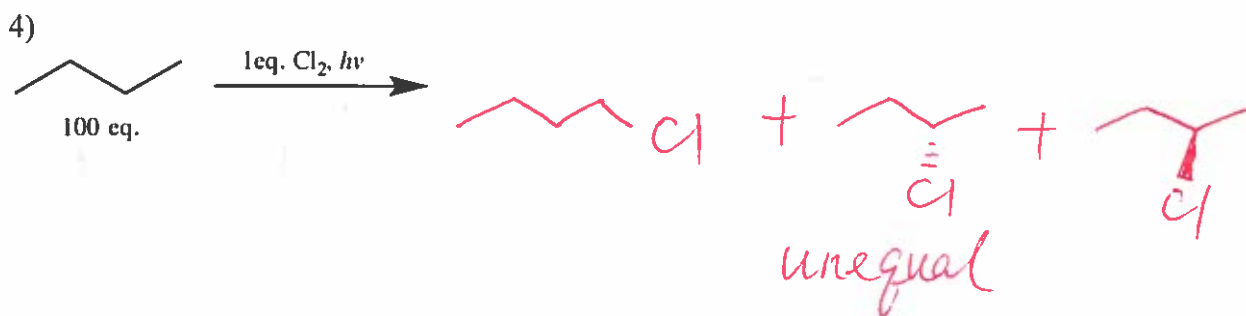
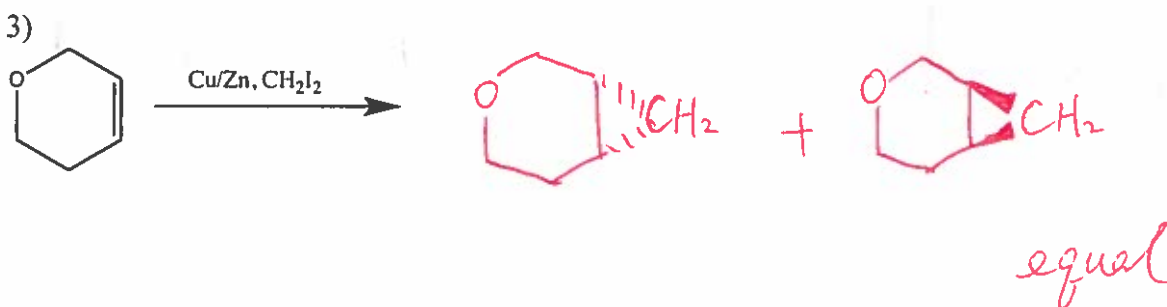
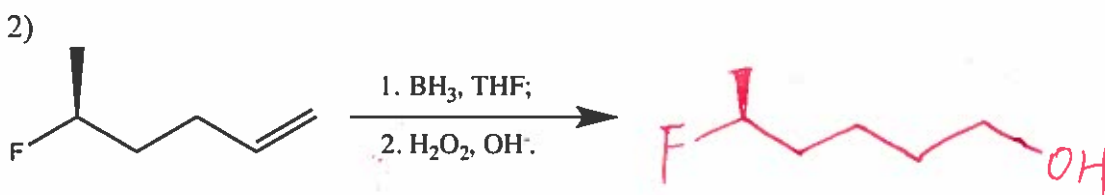
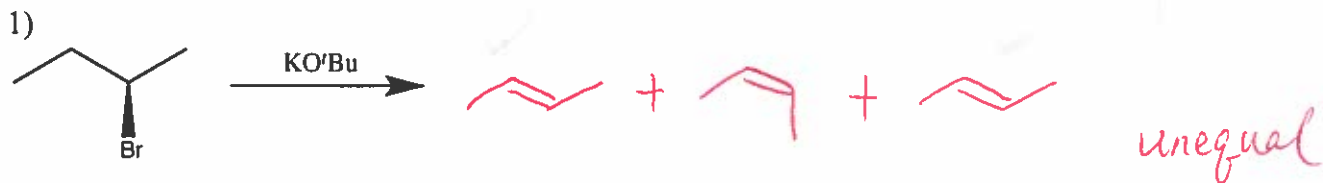
b) draw the transition state of the above reaction under condition: i. NaCN. (4 pts)



c) draw the transition state of the above reaction towards the major product under condition: ii. t BuOK. (4 pts)



6. Provide the products for the following reactions. If no reaction occurs under the given conditions, write N.R. (2 pts each). If a reaction would produce isomers (enantiomers, diastereomers, regioisomers, or constitutional isomers), draw each isomer (2 pts each) and indicate if they will be produced in equal or unequal amounts. (1 pt each)



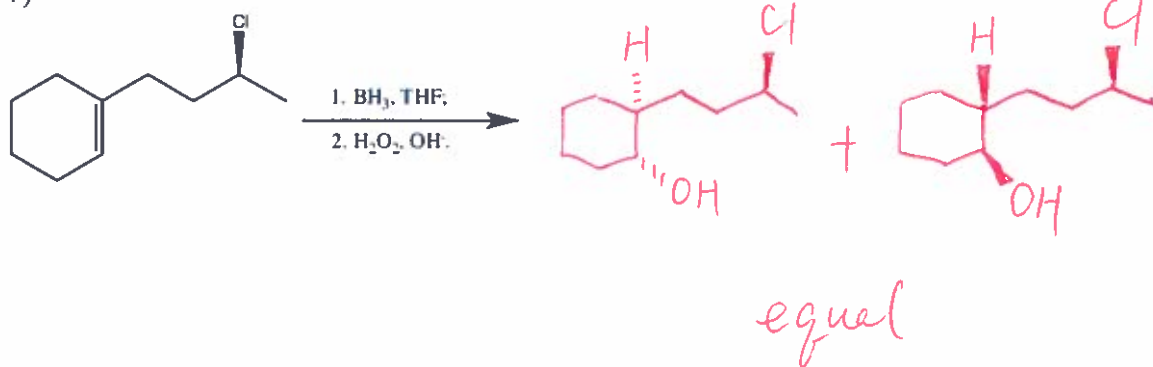
5)



6)



7)



8)

