

Student ID \_\_\_\_\_

Name \_\_\_\_\_

Recitation Date/Time \_\_\_\_\_ TA Name \_\_\_\_\_

page points:

2 \_\_\_\_\_ (30)

3 \_\_\_\_\_ (32)

4 \_\_\_\_\_ (26)

5 \_\_\_\_\_ (12)

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.**

**Please silence your cell phones and keep them in your bags during exam.**

**You may use molecular models. Please bring them in transparent bags.**

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

1. Provide the structure for each of the following compounds. (4 pts each)

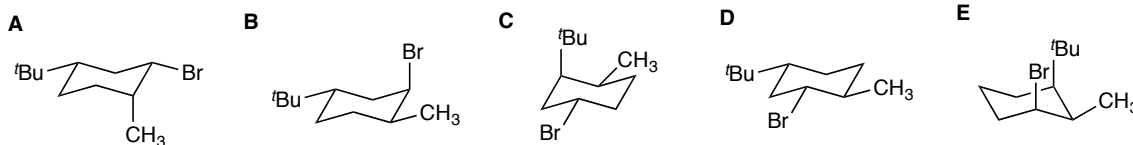
a) (R)-3-fluoro-3-methylhexane

b) (1S,2S,4R)-1-butyl-2,4-dichlorocyclohexane

c) (Z,R)-4-bromo-5-methyl-3-octene

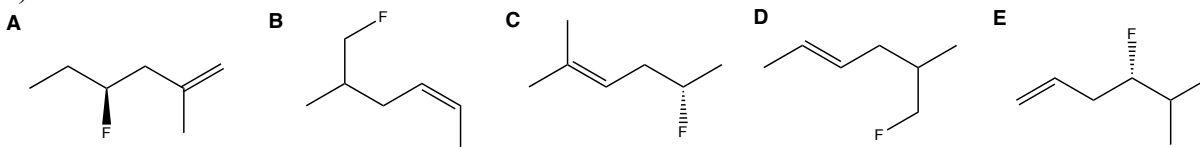
2. Identify the most and least stable species in each of following series. (3 pts each)

a)



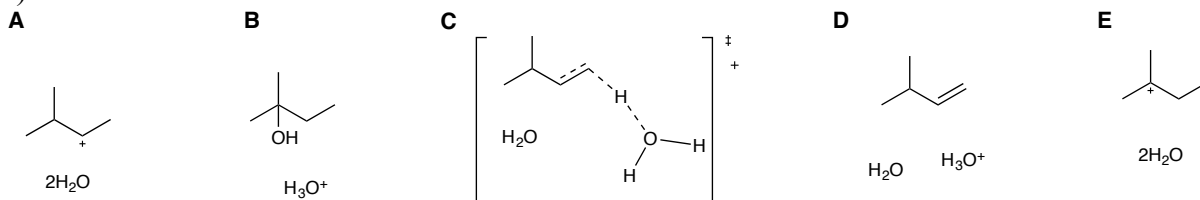
Most stable: \_\_\_\_\_; Least stable: \_\_\_\_\_.

b)



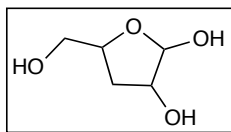
Most stable: \_\_\_\_\_; Least stable: \_\_\_\_\_.

c)



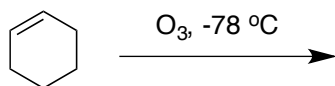
Most stable: \_\_\_\_\_; Least stable: \_\_\_\_\_.

3. Draw all stereoisomers of the following structure (16 pts).

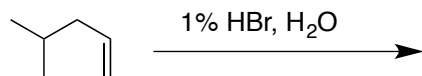


4. Provide the major product(s) for each of the following reactions (stereochemistry not required, 4 pts each)

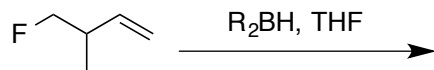
a)



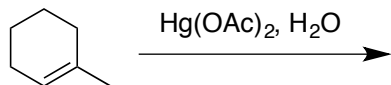
b)



c)



d)



5. Provide the best reaction condition for each of the following transformations (4 pts each)

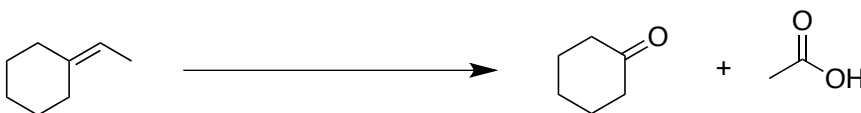
a)



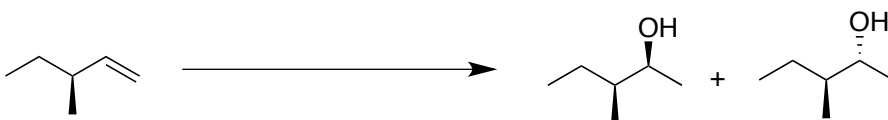
b)



c)

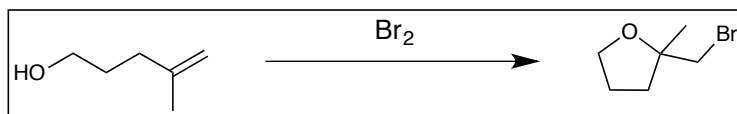


d)



6. Use curved arrow or fishhook notation to draw the mechanism for each of the following reactions. **Do NOT draw in the box.**

a) 10 pts



b) 12 pts



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