CHEM-3311-300 Fall 2018

Final Exam

Name _____

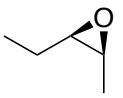
Student ID _____

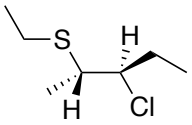
page	points:
2	_____(16)
3	_____(16)
4	_____(20)
5	_____(18)
6	_____(15)
7	_____(10)
8	_____(5)
Total	_____(100)

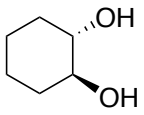
Periodic Table

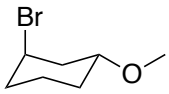
H																	He
Li	Be											B	C	N	O	F	Ne
Na	Mg											Al	Si	P	S	Cl	Ar
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
Cs	Ba	La	Ha	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
Fr	Ra	Ac															

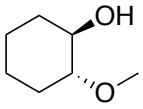
1. A) Give IUPAC names for the following compounds (Be sure to indicate stereochemistry when appropriate) (10 pts).

(a) 

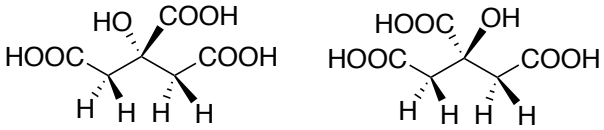
(b) 

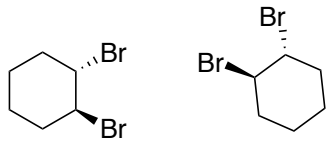
(c) 

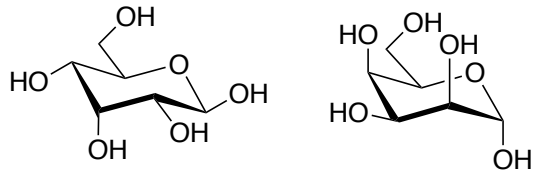
(d) 

(e) 

B) Describe the relationship between each pair of isomers (6 pts).

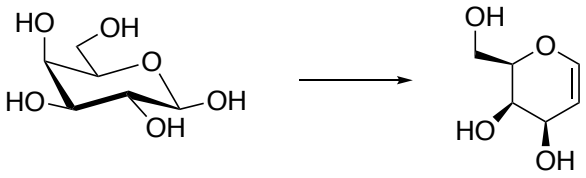
(a) 

(b) 

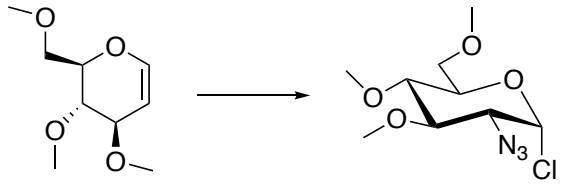
(c) 

C) Determine whether each of the following transformations is an oxidation, a reduction, or neither (4 pts).

(a)

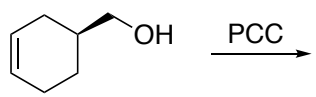


(b)

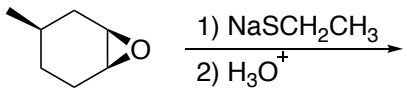


2. Provide the major products of the following reactions (Be sure to indicate stereochemistry when appropriate) (40 pts).

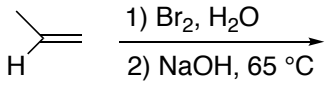
(a)

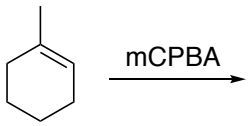


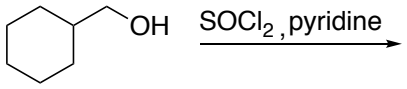
(b)

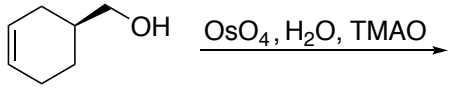


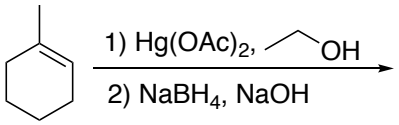
(c)

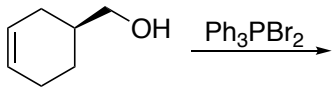


(d) 
mCPBA

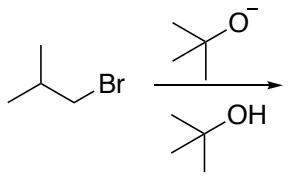
(e) 
OH
SOCl2 ,pyridine

(f) 
OH
OsO4 , H2O, TMAO

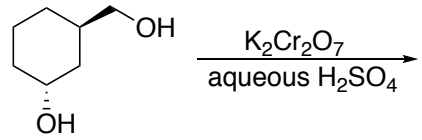
(g) 
1) Hg(OAc)2,
OH
2) NaBH4, NaOH

(h) 
OH
Ph3PBr2

(I)

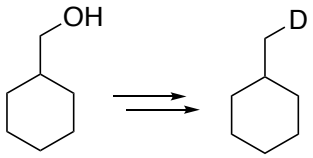


(J)

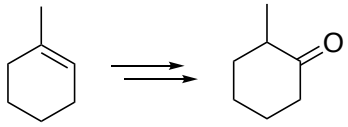


3. Propose a multi-step synthesis for each target molecule from the indicated starting material. Provide the reagents for each step and the product(s) of each step (20 pts).

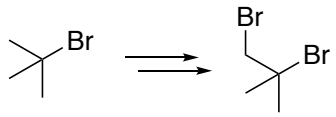
(a)



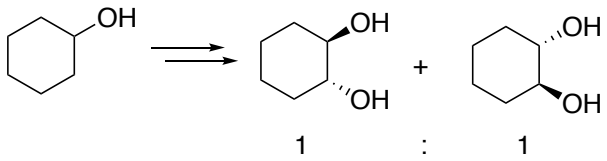
(b)



(c)

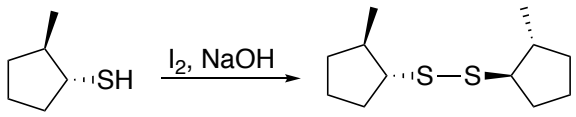


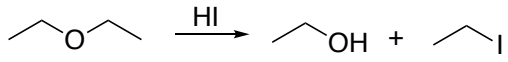
(d)

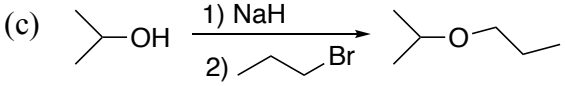


4. Using the curved arrow notation, suggest a mechanism for the formation of each product (20 pts).

(a)



(b) 

(c) 

(d)