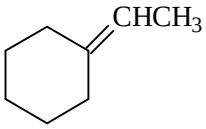
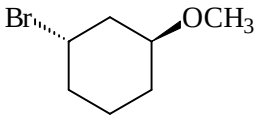
FINAL EXAMINATION, 59-135, 1994

1.

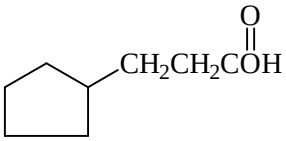
(a) 

(b) $CH_3CH_2CH_2OH$

(c) 

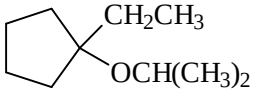
(d) $SOCl_2$

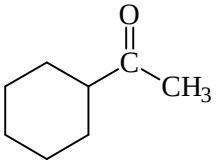
(e) $CH_2{=}CHCH(CH_3)_2$

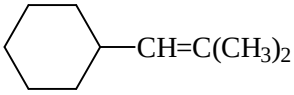
(f) $\xrightarrow{H^+}$ CH_3CH_2OH + 

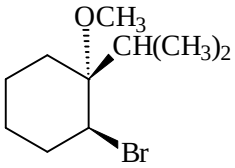
(g) $HOCH_2CH_2CH_2OH$

(h) H_2/Ni

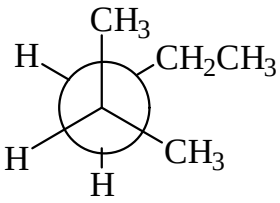
(i) 

(j) $\xrightarrow[Hg^{++}]{H^+}$ 

(k) 

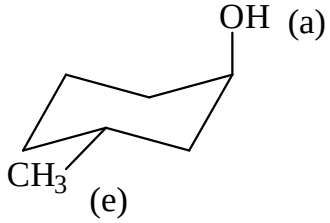
(l) 

2. (a)



(b) (i) enantiomer; (ii) diastereomers; (iii) enantiomers, (iv) diastereomers

(c)



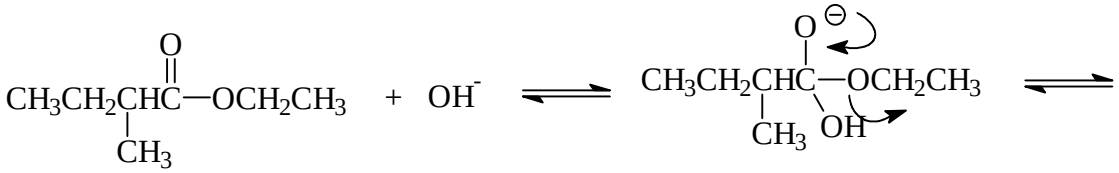
(d) A compound whose mirror image IS superimposable on the original EVEN THOUGH IT CONTAINS CHIRAL CARBONS.

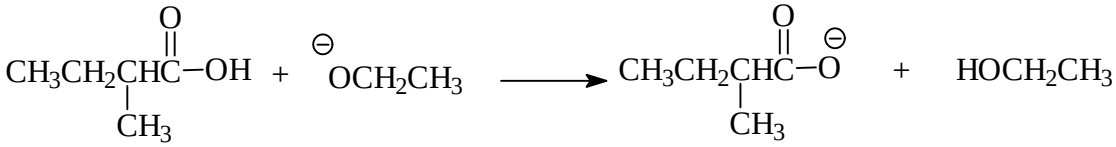
(e) (i) yes; (ii) No; (iii) product is a meso form

(f) (i) No; (ii) yes (will be a mixture of diastereomers, each of which is optically active. Diastereomers do not cancel each other out)

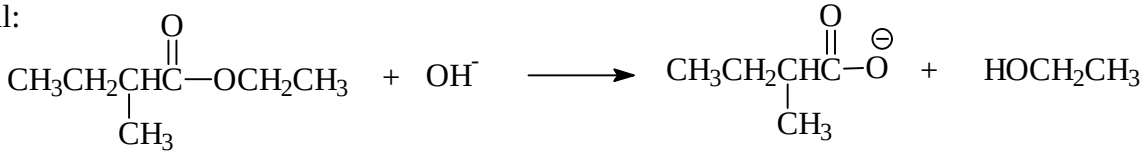
(g) Top Carbon: Priorities Br > Cl > chain > CH_3; Config = S
Bottom Carbon NOT CHIRAL [has two CH_3 groups!]

3.





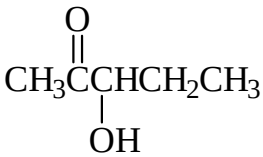
overall:



4. (a) Second reaction is fastest. Carbon is more electrophilic
(b) See answer to this question on 1993 final
(c) Second one is Sn2. First one has resonance stabilized intermediate

5. 1-butene + BH_3 (then H_2O_2)
1-butene + H_2O (with H^+ cat)
1-butene + CH_3OH (with H^+ cat)
1-butene + H_2 (Ni cat)

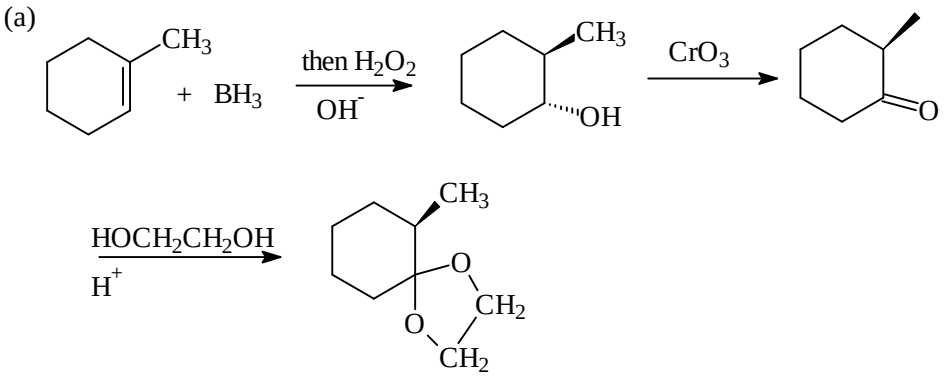
6. (a) Compounds must be ketone and alcohols. One possible structure is:



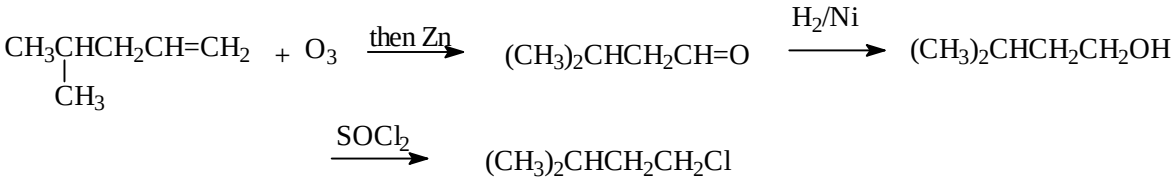
(b) They must be enantiomers - Mirror image at the CH(OH) centre

7.

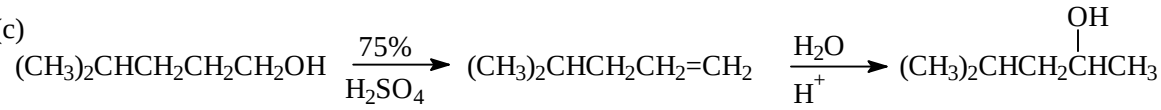
(a)



(b)



(c)



8.

(a) CH_3CHCD_2OH

(b) $(CH_3)_2CHCH_2OD$

(c)