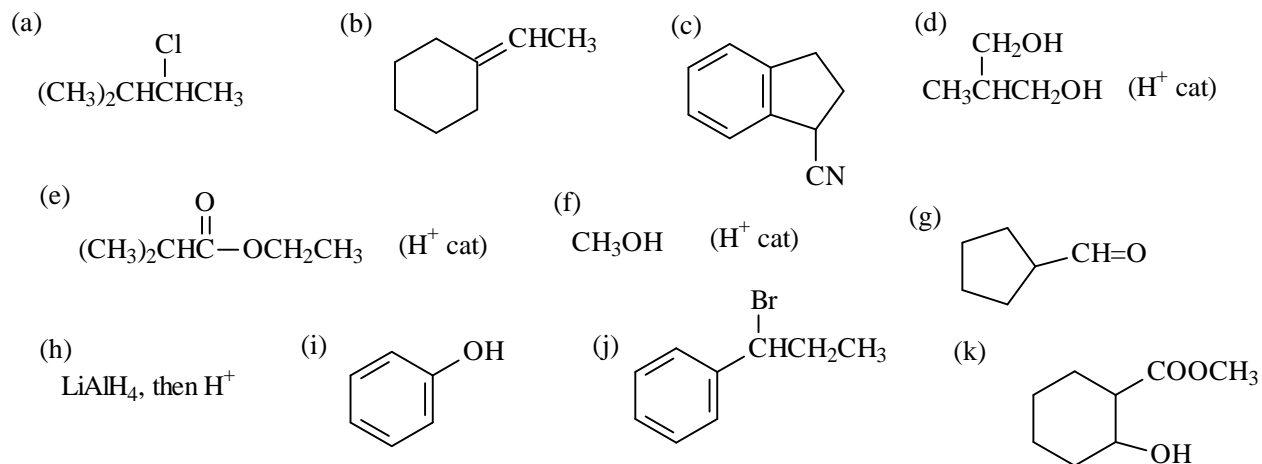


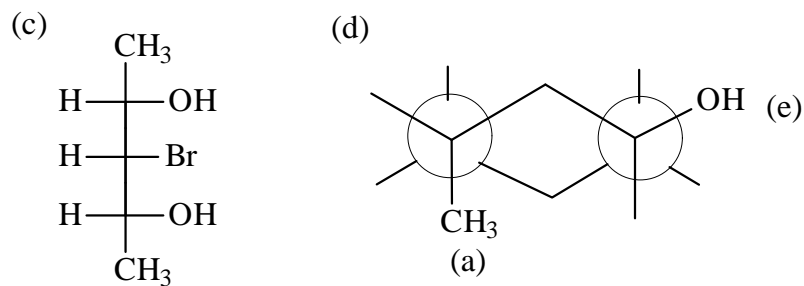
# FINAL EXAMINATION, 59-135 1992

1.



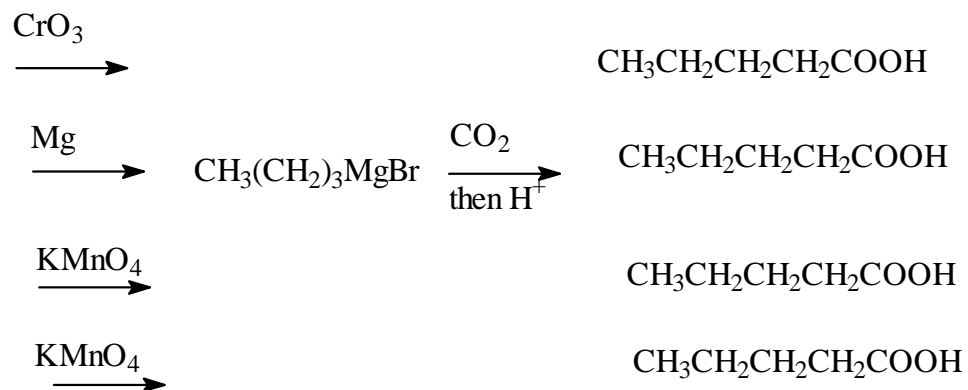
2.

- (a) (i) diastereomers; (ii) diastereomers; (iii) identical; (iv) diastereomers  
 (b) Top carbon priorities are: OH > CHO > chain > H, Config = S  
 Middle carbon priorities are: OH > C(CHO) > C(OH) > H Config = S  
 Bottom Carbon priorities are: OH > chain > CH<sub>3</sub> > H Config = R

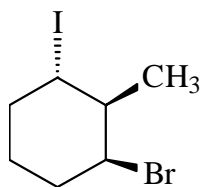


3.

(b)

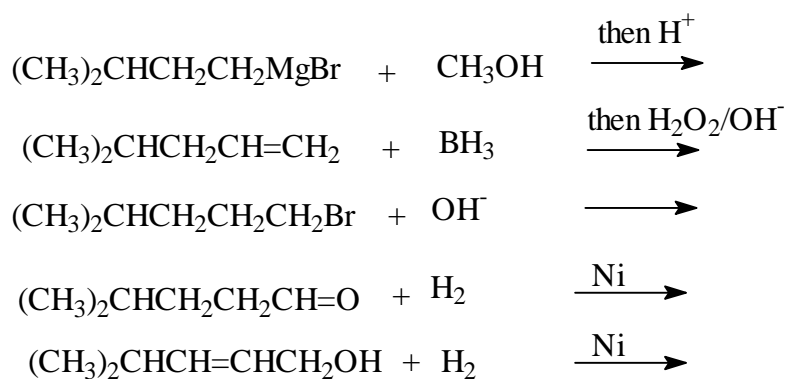


(c) The product has the structure



It is formed by *trans* addition because the iodonium ion can form and direct the incoming nucleophile to the opposite side of the molecule. The more positive part of the molecule (i) becomes attached to the less substituted carbon.

5.



6. (a) The second reaction will be  $\text{S}_\text{N}2$  because the intermediate in the first reaction can be resonance stabilized.

- (b) NEITHER!! These are  $S_N1$  reactions and the rate will not depend on the nucleophile
- (c) The first reaction CANNOT give an optically active product. Therefore the only reaction that can possibly give an optically active product is the second one.

7.

