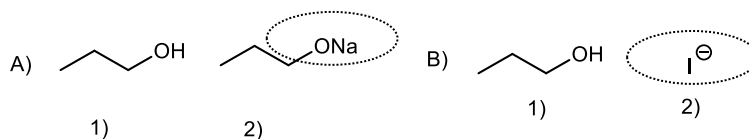
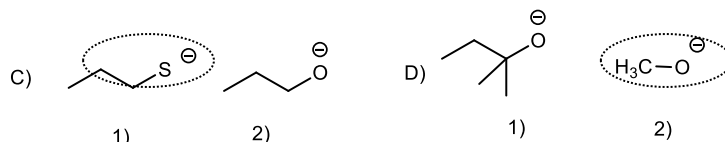


- 1 Which compound in the following pairs is more reactive as a nucleophile in a protic solvent? (4 Marks)



ROH –poor nucleophile  
RO(-ve) strong base good nucleophile

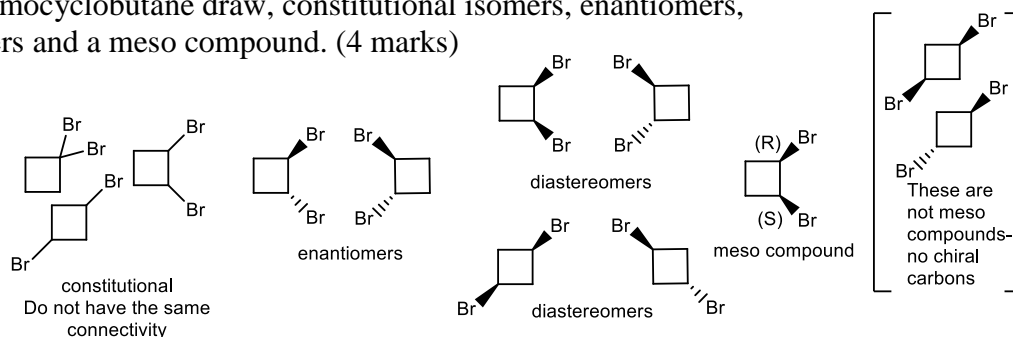
I(-ve) large polarizable good Nu:



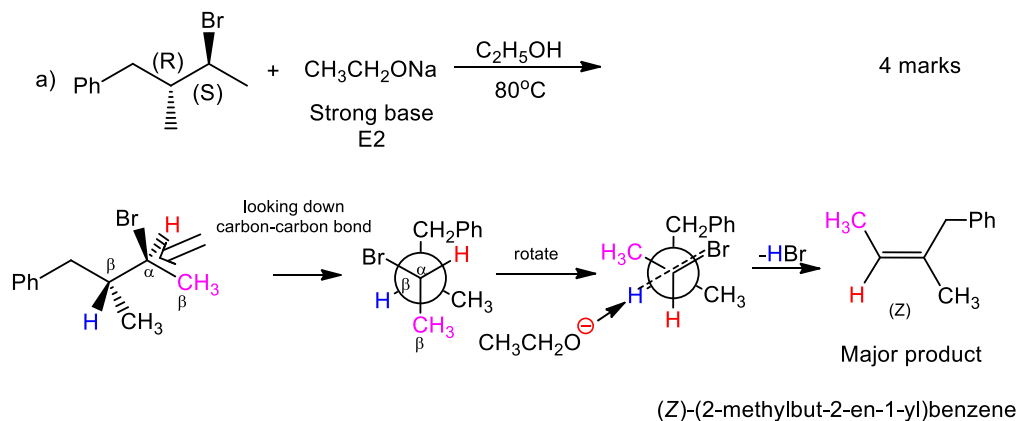
Sulfur larger-polarizable good Nu:  
RO(-ve) slowed down by hydrogen bonding with solvent

methoxide unhindered better Nu:

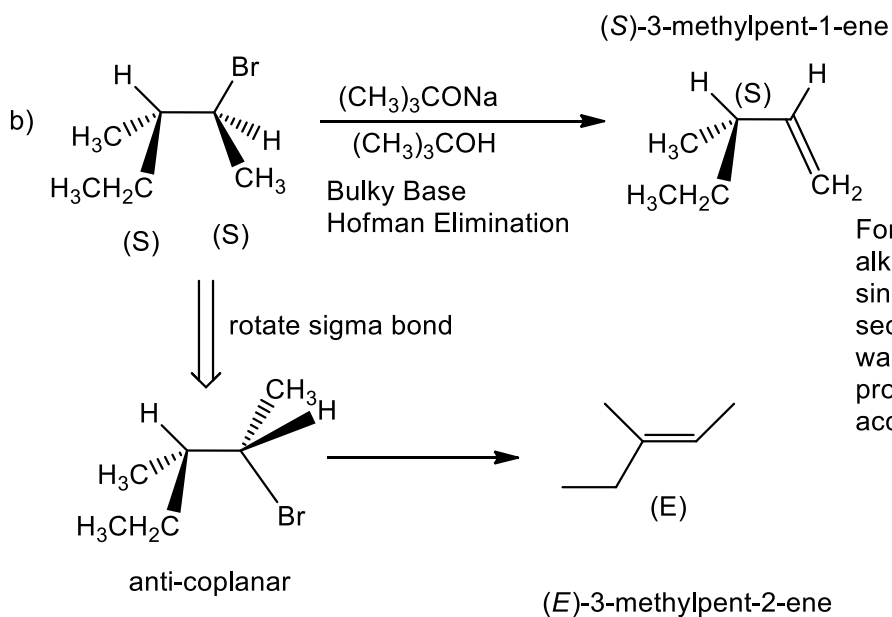
2. Using dibromocyclobutane draw, constitutional isomers, enantiomers, diastereomers and a meso compound. (4 marks)



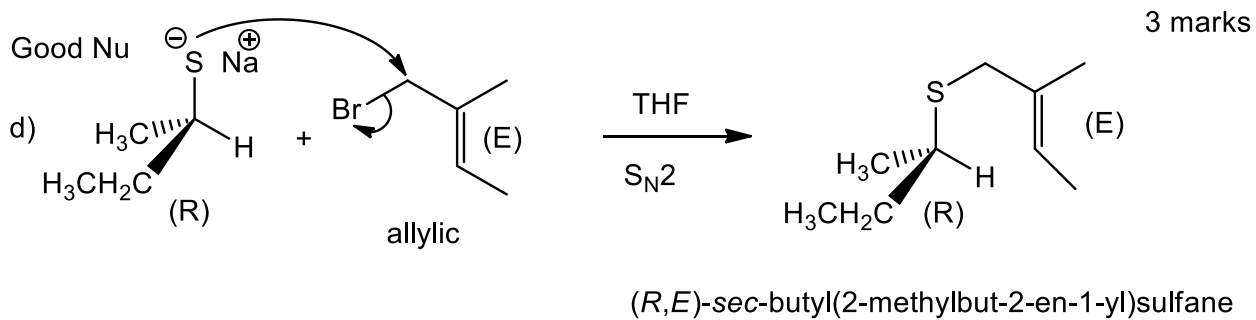
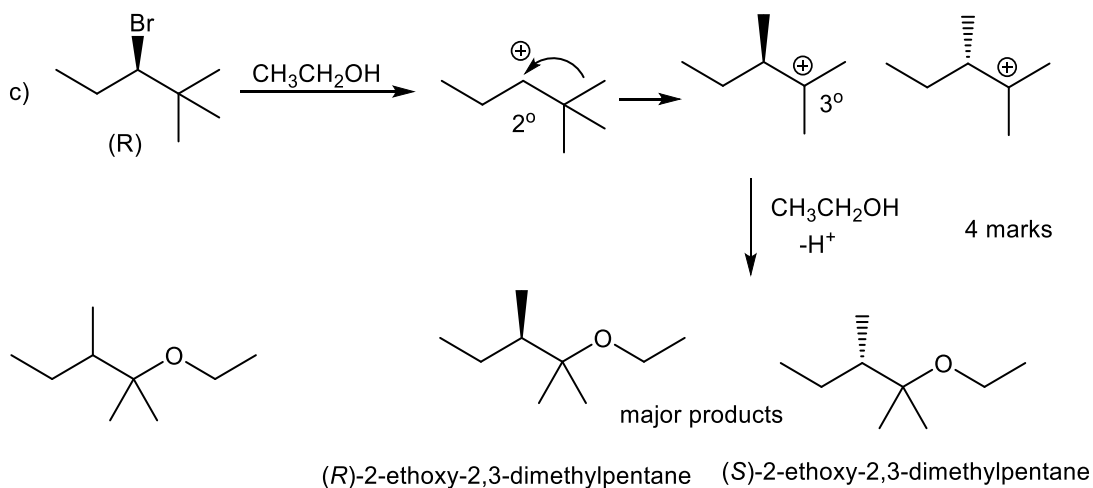
3. a) Determine the stereochemistry of the reactants as (R), (S), (E) or (Z).  
b) What are the major product(s) formed in the following reactions.  
c) Determine the stereochemistry of the major products as (R), (S), (E) or (Z).  
d) If more than two major products are formed, what relationship do they have with each other? (enantiomers, diastereomers, meso, or are they achiral molecules)  
(22 marks total)

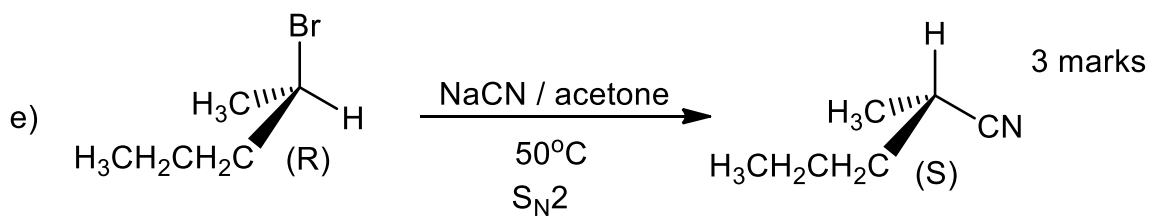


3 marks

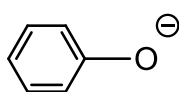


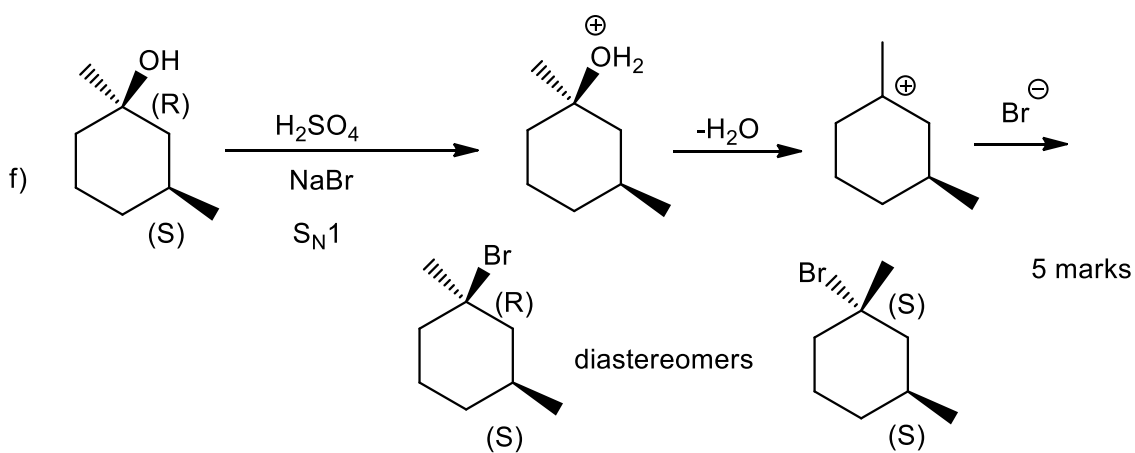
For this reaction the (E) alkene is the major product since the electrophile is secondary. If the alkyl halide was tertiary the Hofman product would be major. I accepted both answers





(S)-2-methylpentanenitrile

$\ominus$  CN Great Nu. Weak base. It is a weaker base than 

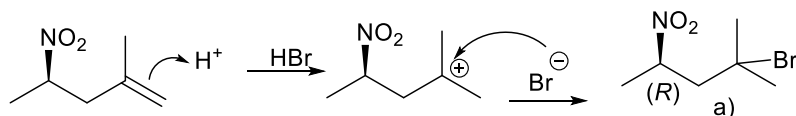


(1R,3S)-1-bromo-1,3-dimethylcyclohexane

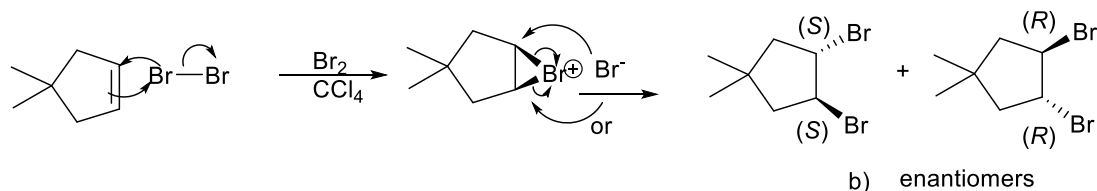
(1S,3S)-1-bromo-1,3-dimethylcyclohexane

1. a) What are the major product(s) formed in each of the following reaction.  
 b) Draw the mechanism for each reaction unless otherwise indicated.  
 c) Draw all stereoisomers that may form and label chiral carbons as (R) or (S)  
 d) If stereoisomers are formed determine if they are enantiomers, diastereomers, a meso compound or an achiral molecule. (30 Marks,)

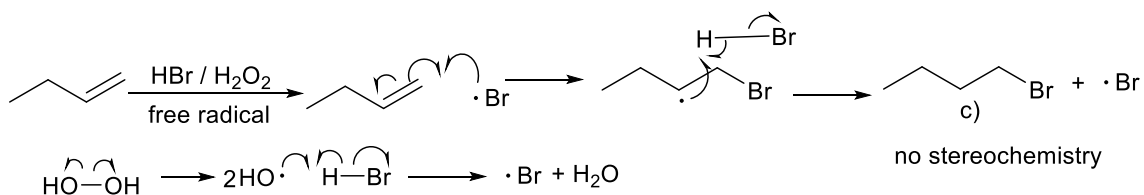
3 marks



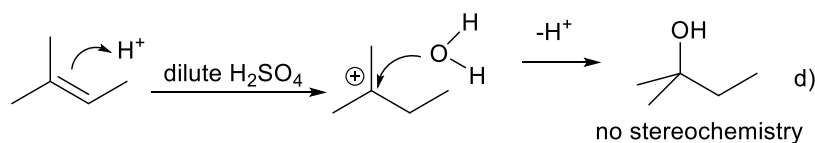
4 marks



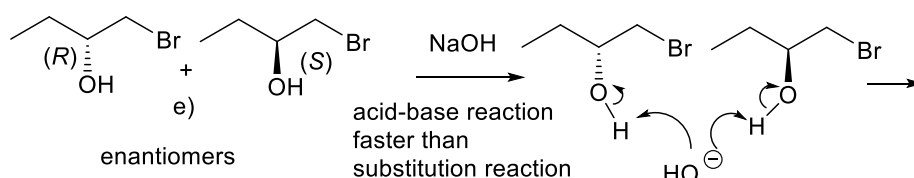
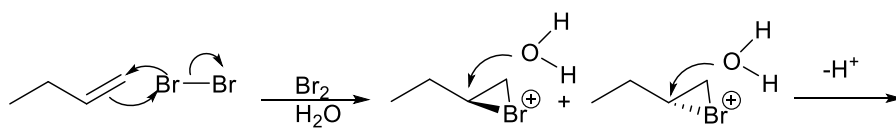
2 marks



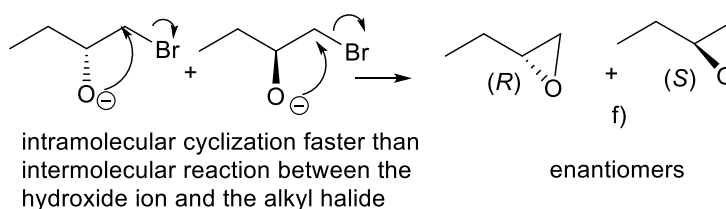
1.5 marks



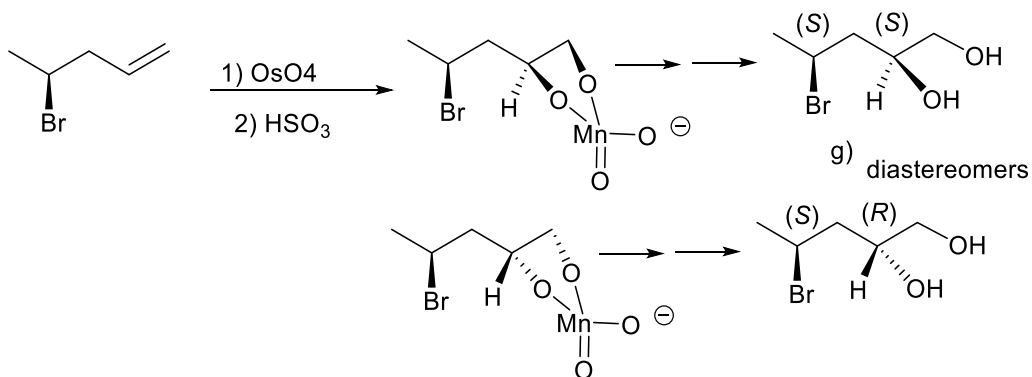
3.5 marks



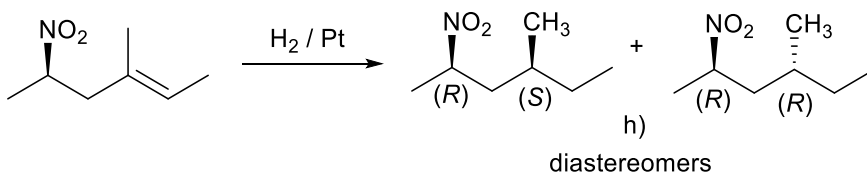
3.5 marks



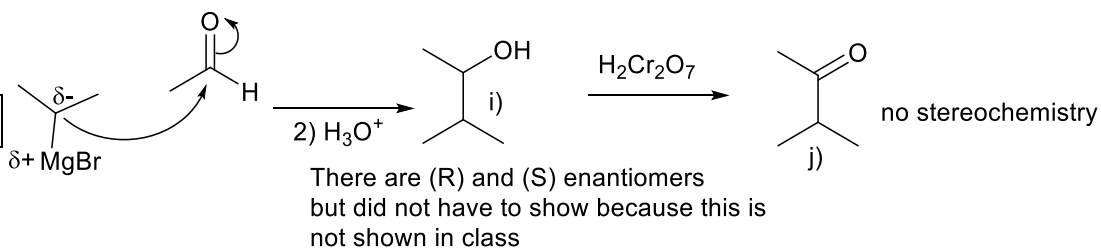
3 marks



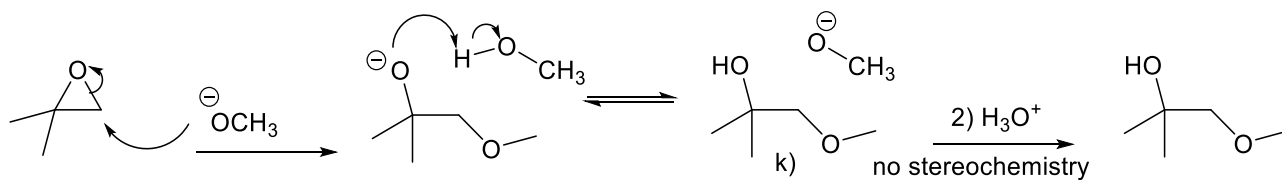
3 marks



2.5 marks



2 marks



2 marks

