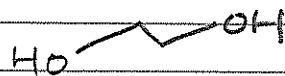
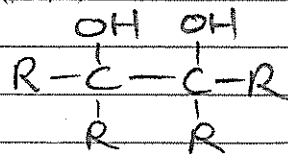


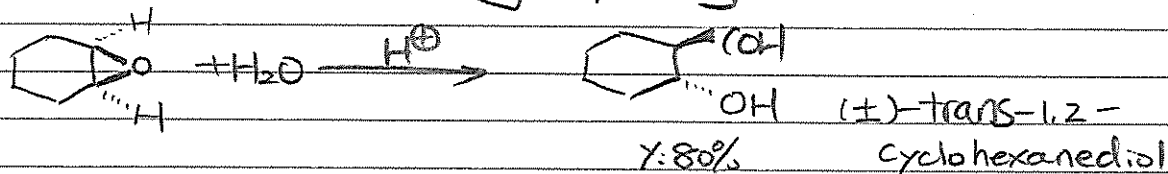
# Dec. 8 Ch 11 (con'd)

## Glycols (diols)



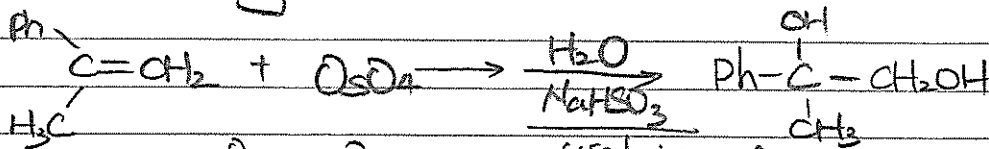
Ethylene glycol  
(ethane-1,2-diol)

### ① acid-catalyzed epoxide ring-opening



pay attn: cis-diol cannot be prepared

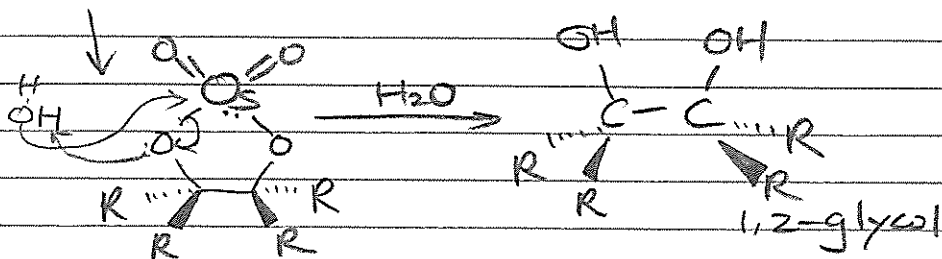
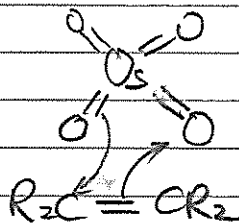
### ② oxidative cleavage



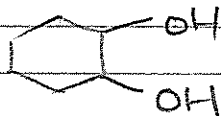
used to reduce  $\text{H}_2\text{OsO}_4$  and remove the side product

$\text{Os(VIII)}$  electron deficient  
toxic & expensive

Syn-addition



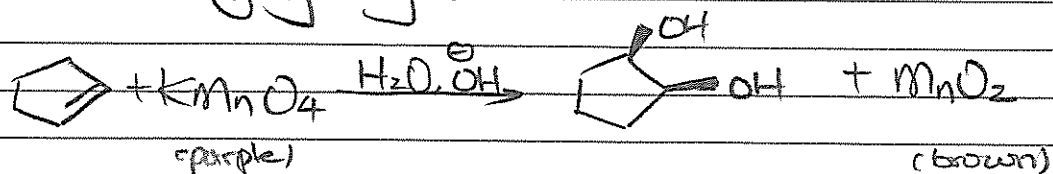
the hydrolysis of epoxides and the  $\text{OsO}_4$  oxidation are complementary rxns:



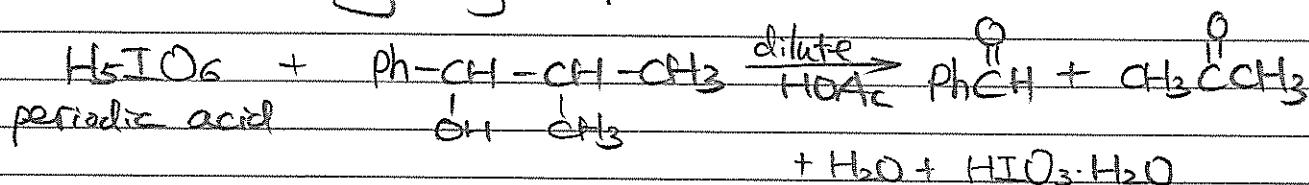
trans - prepared by epoxide ring-opening

cis - prepared by  $\text{OsO}_4$  oxidation

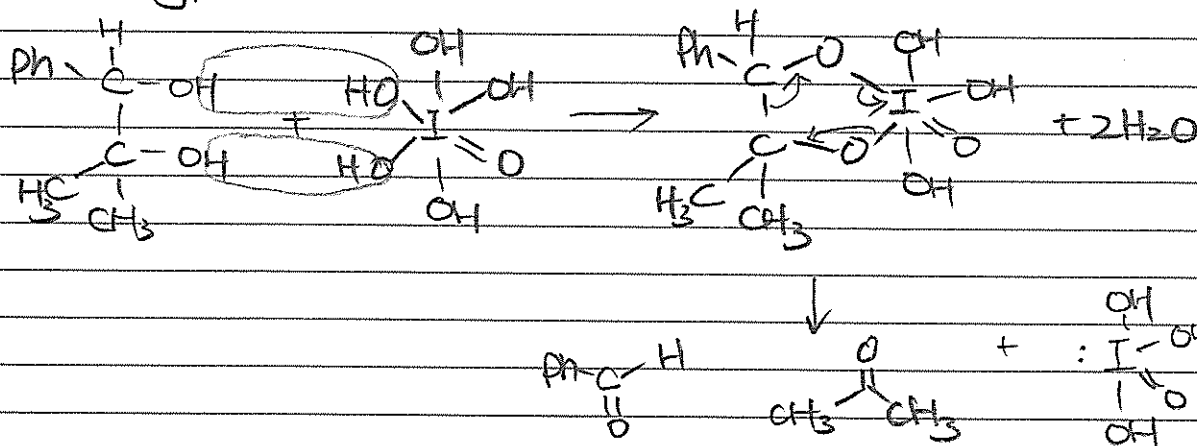
Alternative Oxidizing agents:



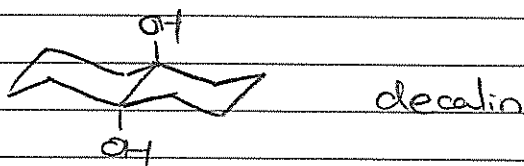
③ oxidative cleavage of Glycols



used for glycol detection



- predict the products of



④ proximit effect : neighboring-group participation

⑤ oxidation of ethers and sulfides

-ethers are relatively inactive towards most oxidants

