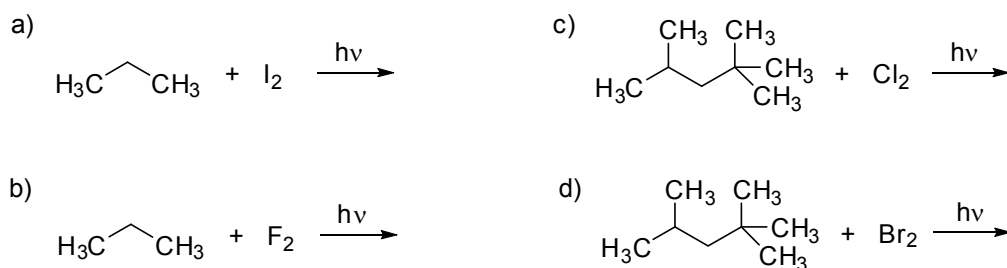


3. HETEROATOM SUBSTITUTION PART 1

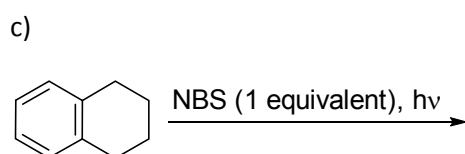
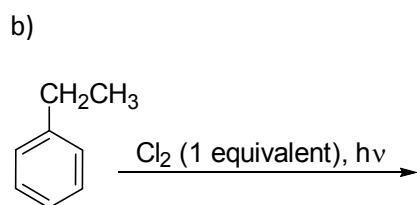
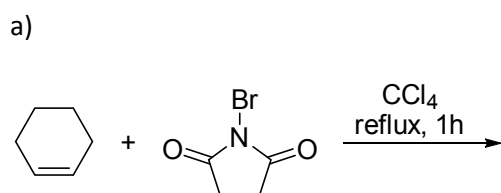
1. Write the major organic product(s), if any, of each of the following reactions. Calculate product ratios in each if the reactions. Use relative reactivity data for F_2 and Cl_2 at 25 °C and for Br_2 at 150 °C (Table*). Which, if any, of the discussed reactions will give the major product with reasonable selectivity? (VS ch. 3)



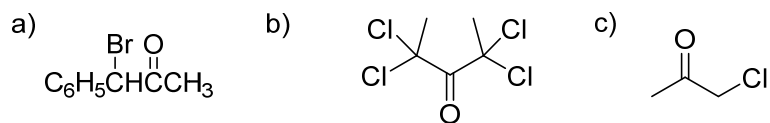
C-H bond	$F\cdot$ (25°C, gas)	$Cl\cdot$ (25°C, gas)	$Br\cdot$ (150°C, gas)
CH_3-H	0.5	0.004	0.002
RCH_2-H^a	1	1	1
R_2CH-H	1.2	4	80
R_3C-H	1.4	5	1700

*(VS, 5th edition, ch. 3)

2. Give the expected major product(s) of the following reactions (VS):



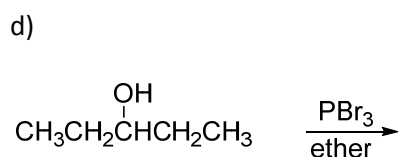
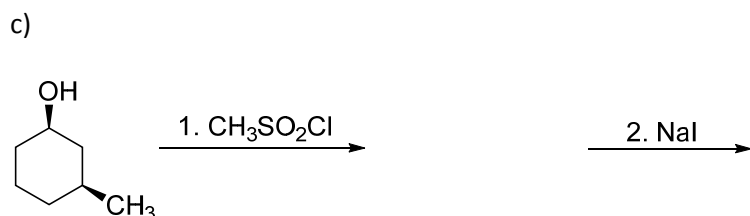
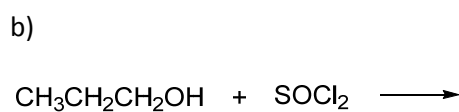
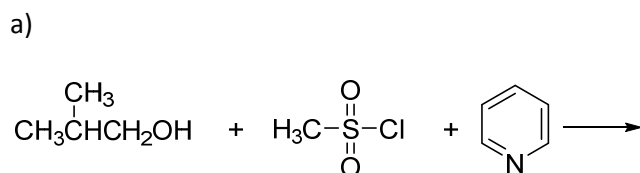
4. Describe the experimental conditions that would be best suited for the efficient synthesis of each of the following compounds from the corresponding non-halogenated ketone (VS).



5. Explain abbreviations listed in the table below.

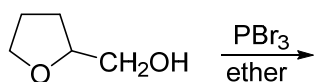
Abbreviation	Name	Formula/Composition	Application
Ms, OMs			
Ts, OTs			
DEAD			
COD			
MNNG			
ADDP			
DBU			
TMS			
DMAP			
DME			
DCC			
NMP			
(R/S)BINAP			

6. Predict the product of the reaction or reaction sequence (VS, CS).



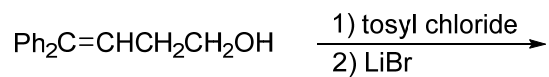
J. Org. Chem., **1961**, *26*, 3645.

e)



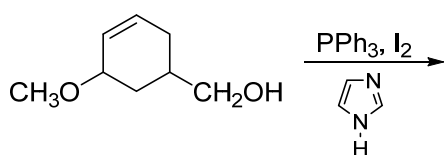
DOI: 10.15227/orgsyn.023.0088 ; *Org. Synth.* **1943**, 23, 88.

f)







J. Am. Chem. Soc. **1966**, 88, 1732.

g)

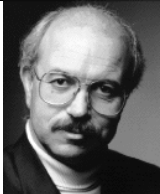



J. Org. Chem. **1990**, 55, 2771.

7. Provide the name and details of the following name reaction.

Chemist	Name	reactant(s)	reagent	product
	... synthesis		NaH	
	... synthesis		DEAD	
	... synthesis		PPh_3	
	... reaction			phosphonate ester

Advanced Organic Chemistry

		Corey- ... macrolactonization			
		... reagent		1-Fluoro-2,4- dinitrobenzene	