

- ① S_N vs E
- ② SYNTHESIS
- ③ HALOALKANES
- ④ PREPARATION

READ 7.1 - 7.6

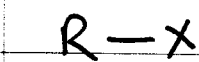
PROBLEMS 7.1 - 7.3

① S_N vs E } Pages 4 & 5 from Lee 23

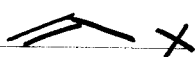
② SYNTHESIS }

③ HALOALKANES

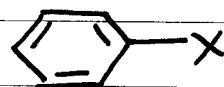
halogens F, Cl, Br, I



alkyl halide



vinyl halide



aryl halide

- read through naming rules

POLARITY & BOILING POINT

- electronegativity
- bond length
- polarisability

	EN of X	C-X (pm)	DIPOLE MOMENT (D)
CH ₃ F	4.0	139	1.85 D
CH ₃ Cl	3.0	178	1.87 D
CH ₃ Br	2.8	193	1.81 D
CH ₃ I	2.5	214	1.62 D

↑
↓
 N

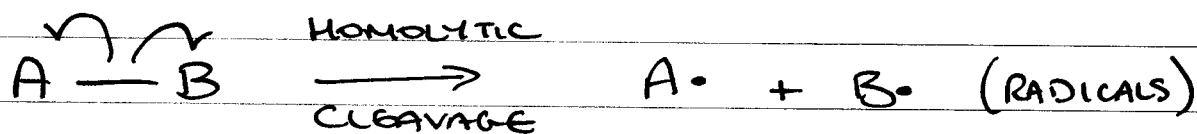
- boiling points increase

R-X	H	F	Cl	Br	I	°C
e.g. CH ₃ CH ₂ -	-89	-37	13	38	72	

polarisability (DISPERSION FORCES)

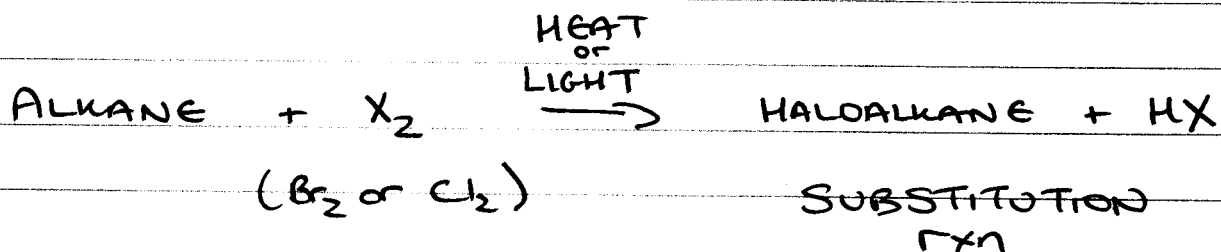
BOND LENGTHS & STRENGTHS

Strength of bonds → BOND DISSOCIATION ENERGIES (BDE)

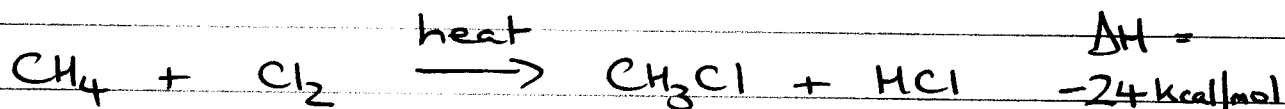
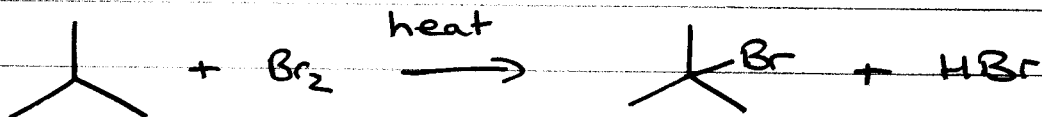


	LENGTH pm	BDE (kcal/mol)
C-H	109	90-100
C-F	142	105
C-Cl	178	80
C-Br	193	65
C-I	214	50

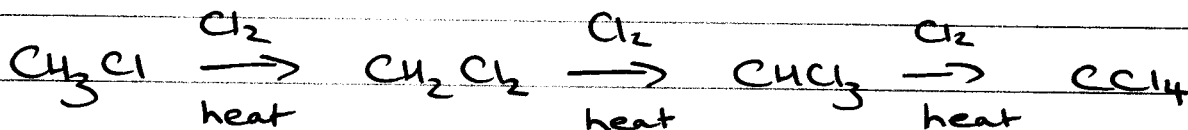
4) PREPARATION



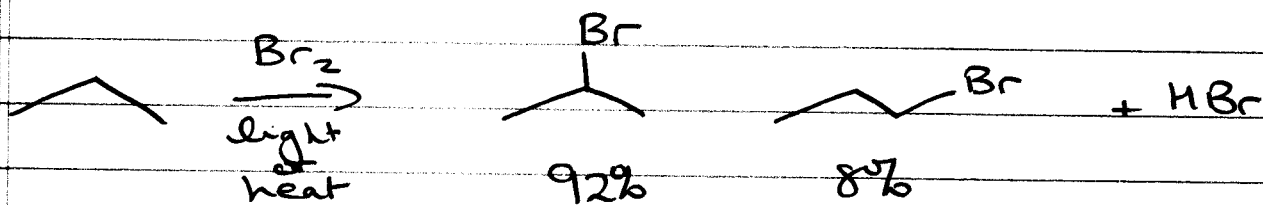
e.g.



reaction continues:

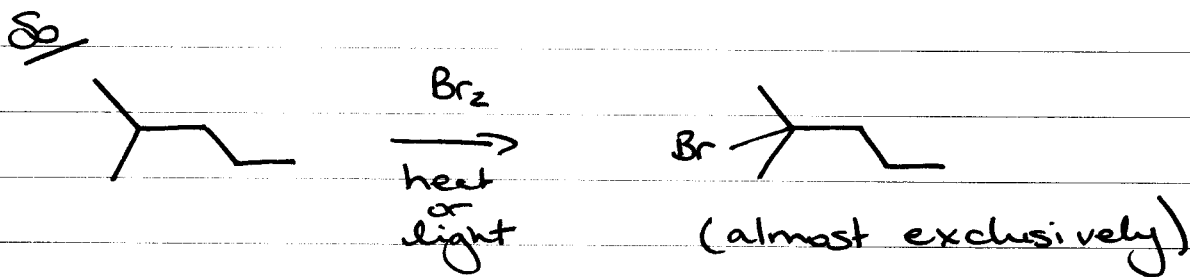


- REGIOSELECTIVITY

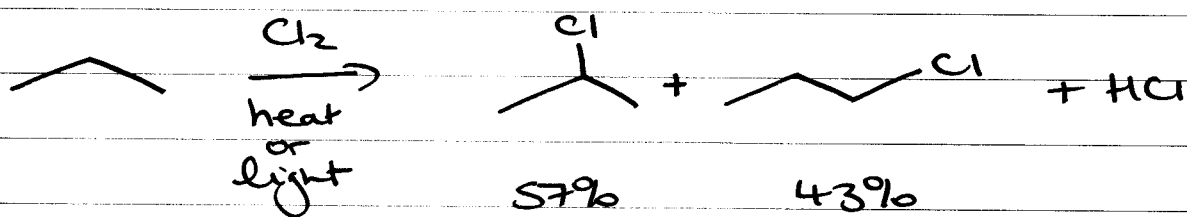


SUB OF 2° H FAVORED OVER 1°

ALSO 3° FAVORED OVER 2°...

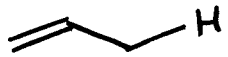

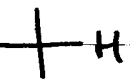
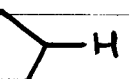

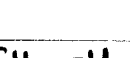
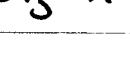


- regioselectivity is not so pronounced for CHLORINATION

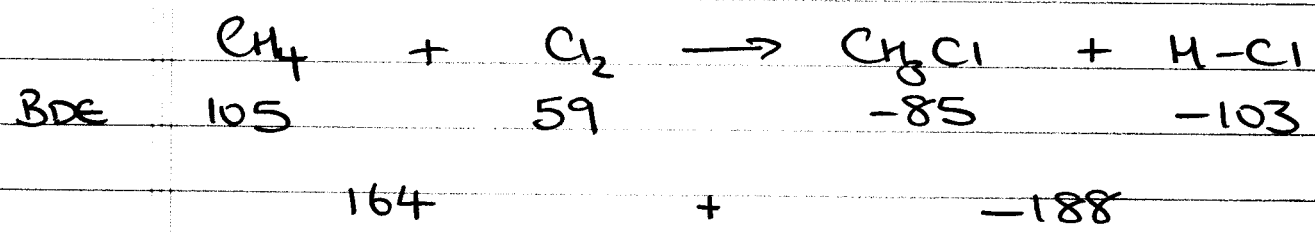


$3^\circ / 2^\circ / 1^\circ$ 1600 : 80 : 1 Br
 5 : 4 : 1 Cl

ENERGETICS

C-H BOND	BDE (kcal/mol)	
 (ALLYL)	86	↑ RADICAL STABILITY
 (BENZYL)	88	
 (^t BUTYL)	93	
 (ⁱ PROPYL)	96	
 (ETHYL)	100	
 (METHYL)	105	
 (VINYL)	106	

So, for



$$= -24 \text{ kcal/mol}$$

(EXOTHERMIC REACTION)