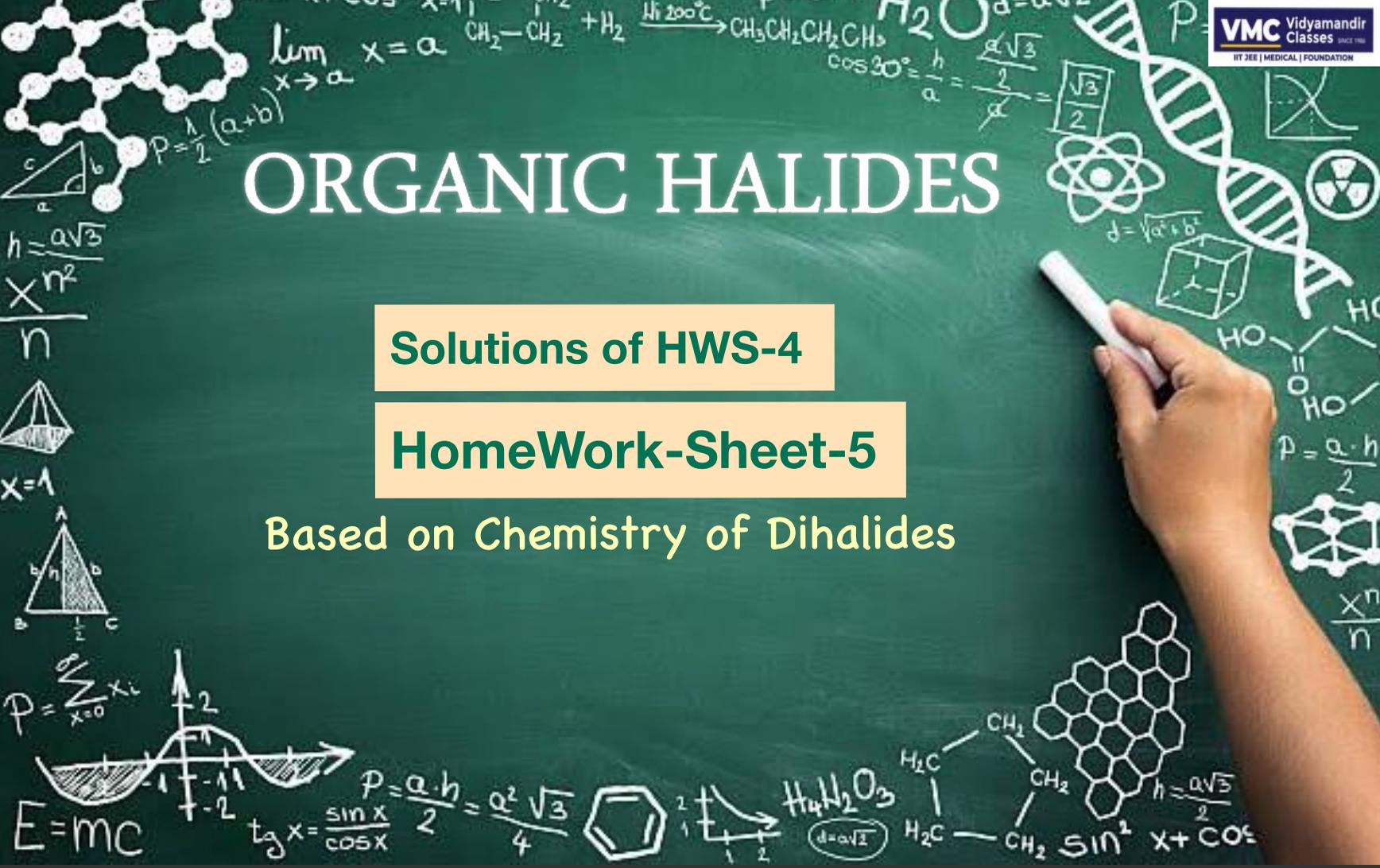


# ORGANIC HALIDES

Solutions of HWS-4

HomeWork-Sheet-5

Based on Chemistry of Dihalides



Answers to Class Test - 1 - Organic Halides

1	2	3	4	5	6	7	8	9	10
A	AD	C	B	BCD	B	D	A	A	B
11	12	13	14	15	16	17	18	19	20
A	C	A	ABD	B	C	AC	C	C	D

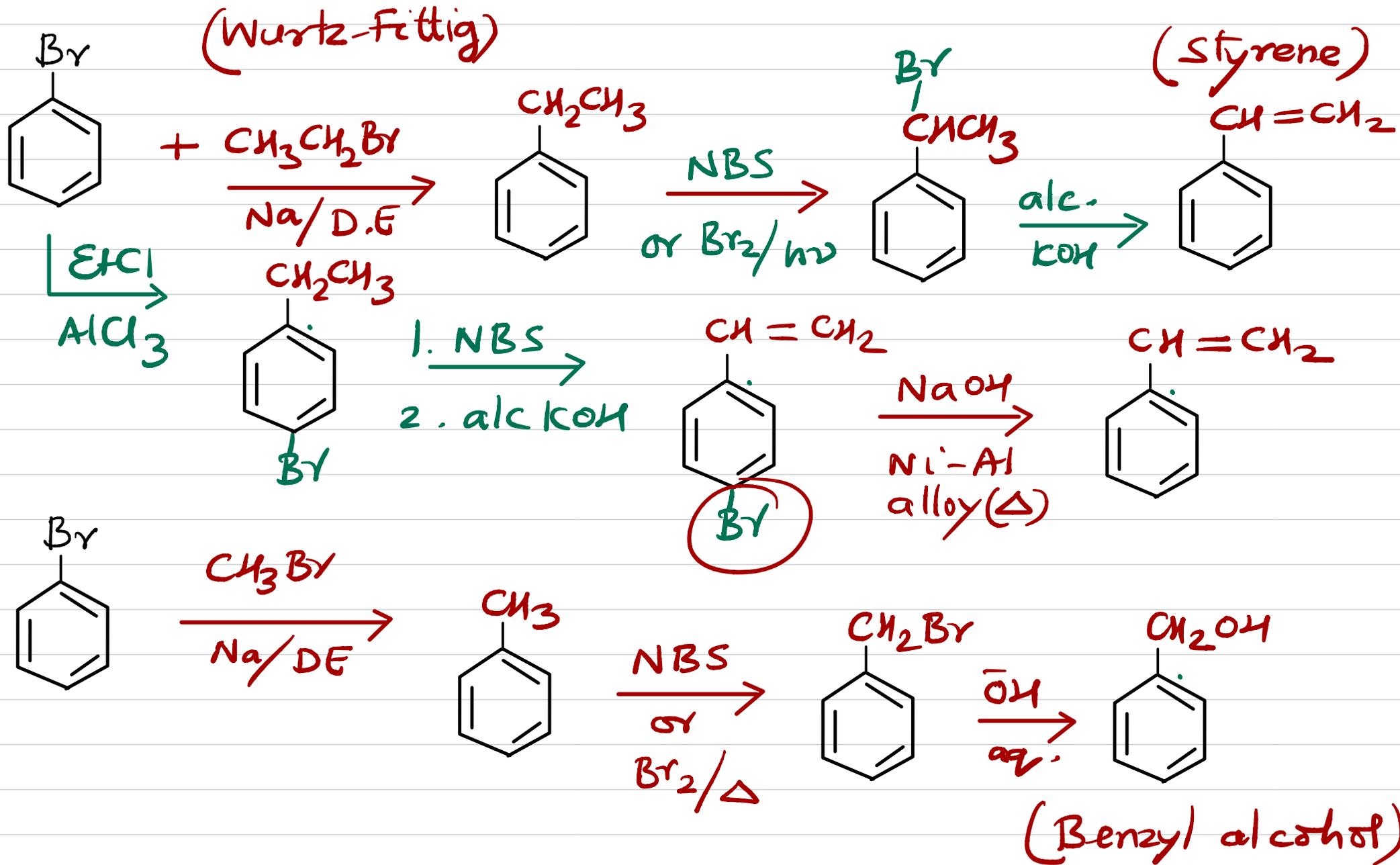
- . Please be relaxed throughout the class.
- . Focus more on listening & writing notes
- . Basically think less.
- . May eat fruits/chocolates 😊

Illustration - 4

How will you convert.

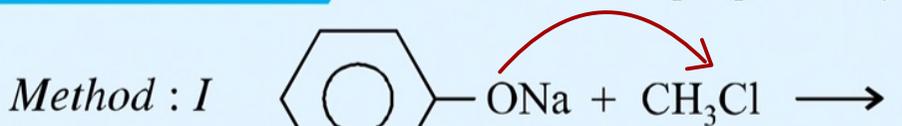
a) Bromobenzene to styrene (in 4 steps)

(b) Bromobenzene to Benzyl alcohol (in 3 steps)



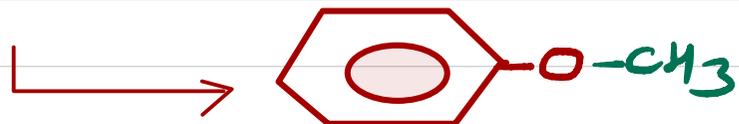
### Illustration - 5

Anisole can be prepared by either of following methods. Which of the two methods is the correct?



(Phenoxide)

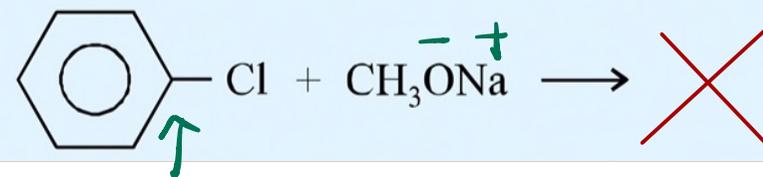
halide



anisole

(correct)

Method : II

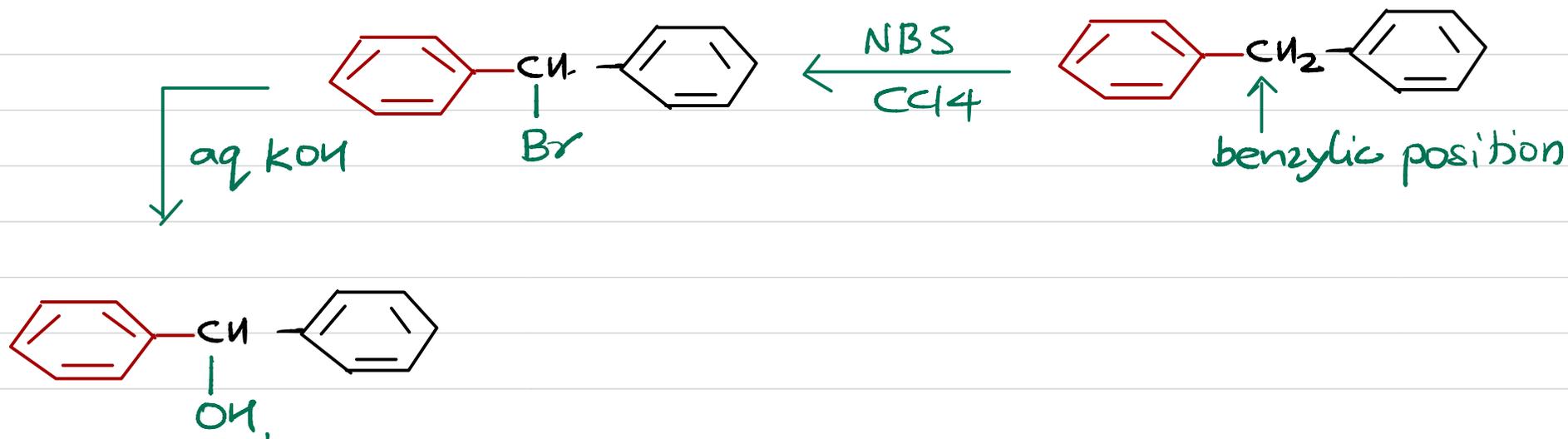
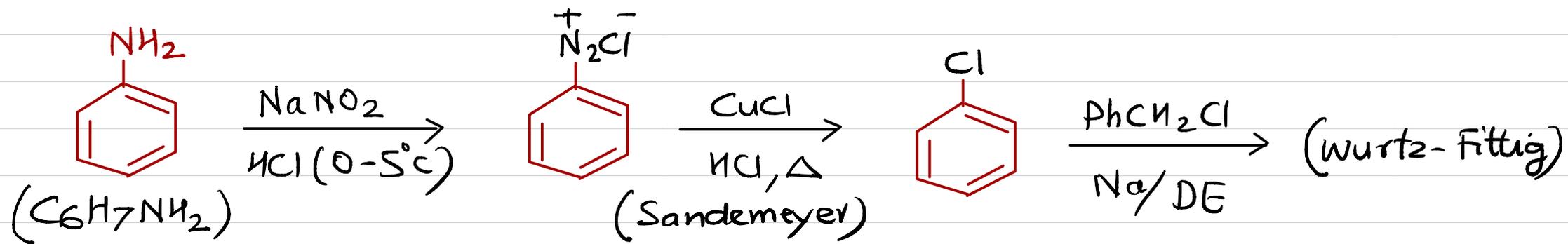
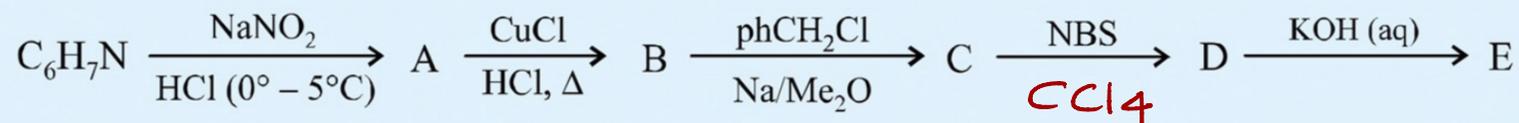


aryl halide

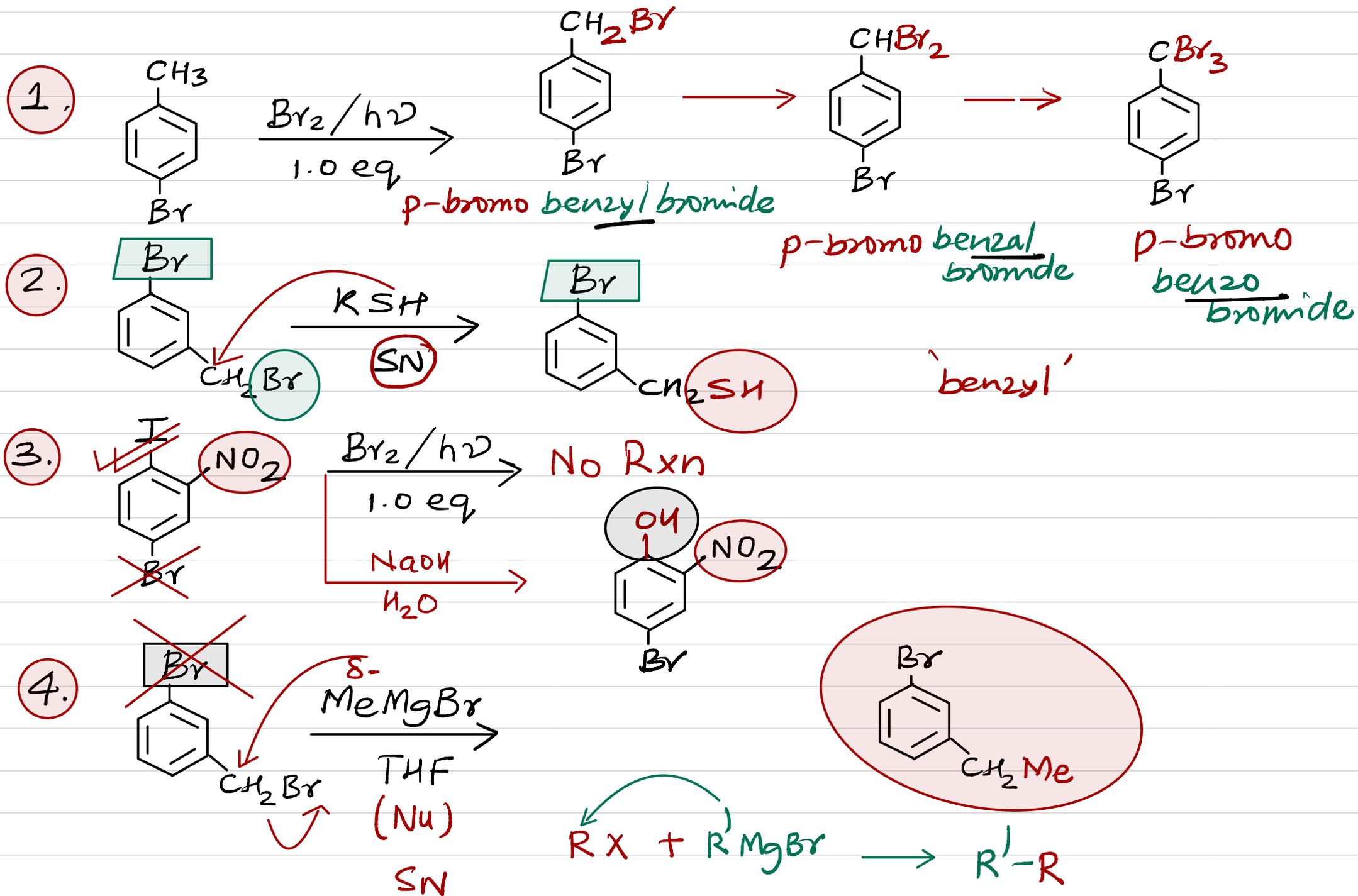
↓ NO  $\text{S}_\text{N}$  because of resonance.

Illustration - 6

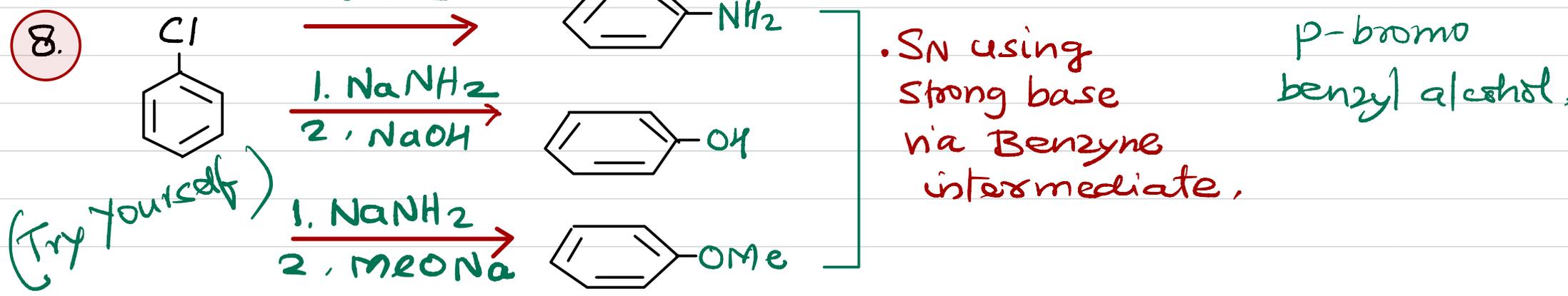
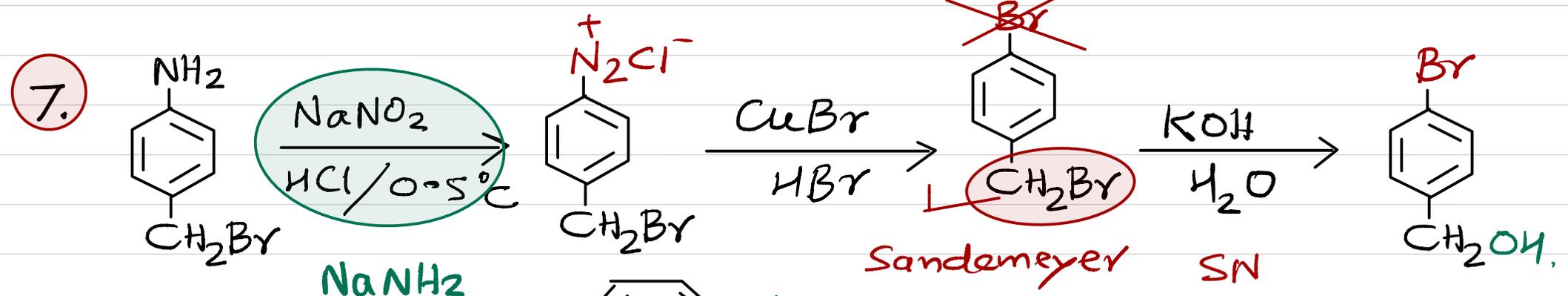
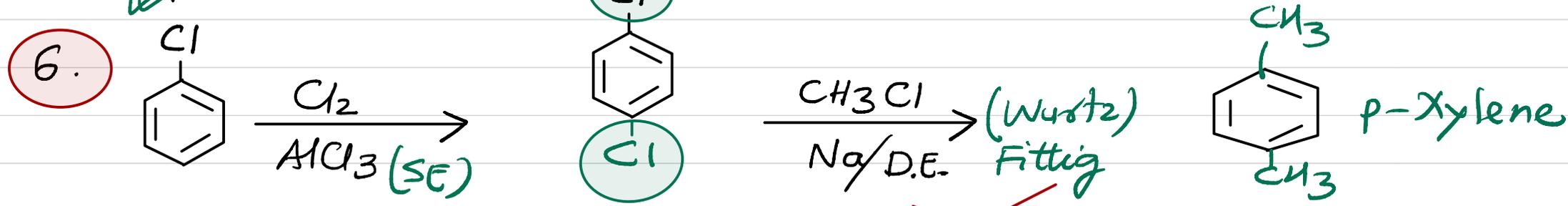
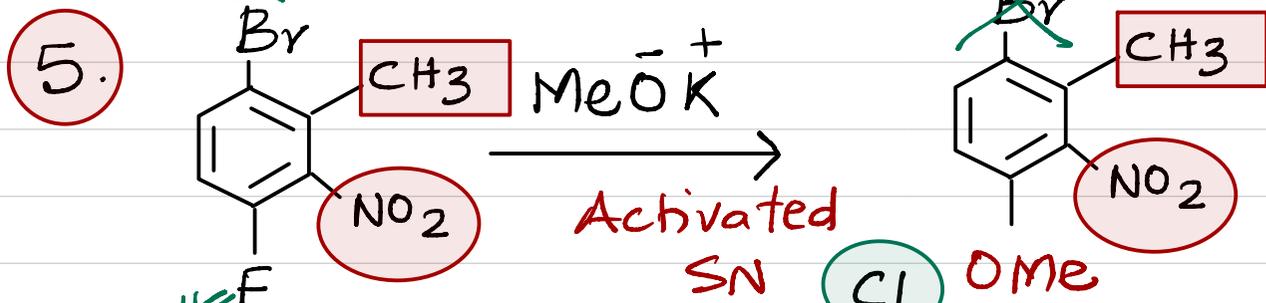
Identify A, B, C ..... in the following reaction set up.



I identify the products:



# Identify the products:



\*2. Chlorine atom is reactive towards aqueous NaOH in :  $S_N$

- (A)  methyl chloride (B)  chlorobenzene (C)  vinyl chloride (D)  benzyl chloride

AD,

~~aromatic~~

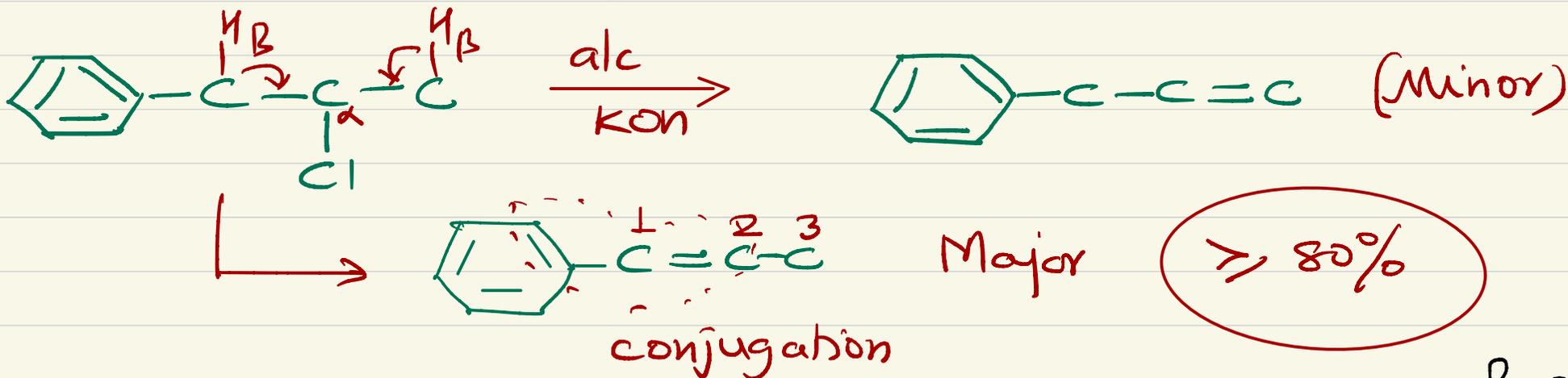
~~aromatic~~

~~alkyl~~

because of resonance : NO  $S_N$

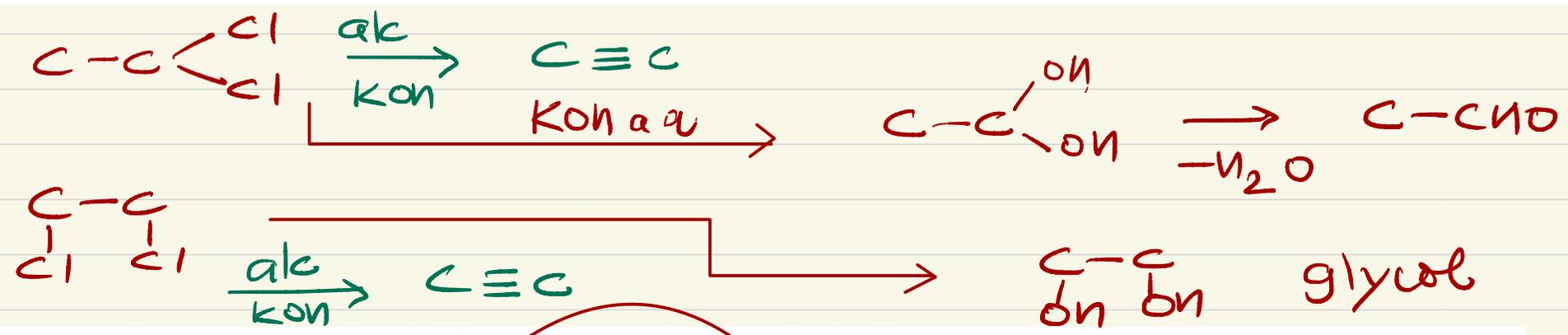
4. Treatment of 1-phenyl-2-chloropropane with alcoholic KOH gives mainly

- (A) 3-phenylpropene (B)  1-phenylpropene  
 (C) 1-phenylpropane-3-ol (D) 1-phenylpropan-2-ol

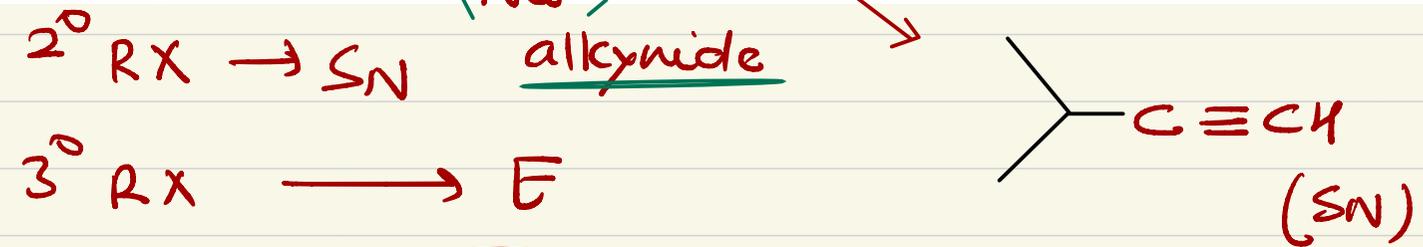


9. An organic halide,  $C_2H_4Cl_2$ , gives an unsaturated hydrocarbon on treatment with alc. KOH, but ethanal on reaction with aq. KOH. The dihalide is :

- (A)  $CH_3CHCl_2$  (B)  $CH_2ClCH_2Cl$  (C) a mixture of (A) and (B) (D) None of these



13. In the following reaction:  $\text{C}(\text{CH}_3)_2\text{Br} + \text{HC} \equiv \text{C}^- \text{Na}^+$  The major product is :



\*14. Which of the following can be used as a substrate in Williamson synthesis of ethers?

(A)  $CH_3CH_2Br$  (B)  $CH_2 = CHCH_2Cl$  ( $1^\circ + \text{allylic}$ )

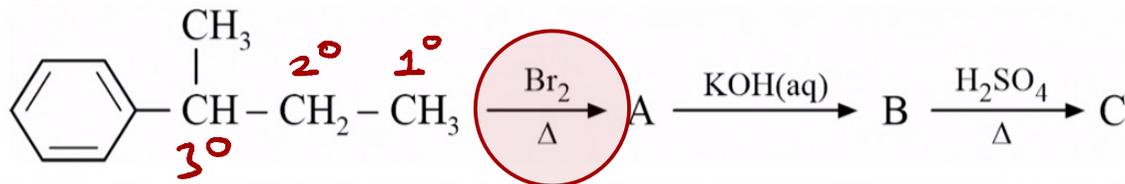
(C)  $CH_2 = CHCl$  (~~vinyllic (no  $\text{S}_\text{N}2$ )~~) (D)  $PhCH_2Cl$  ( $1^\circ + \text{benzylic}$ )





19. Identify the end product (C).

(Phenyl alkane)

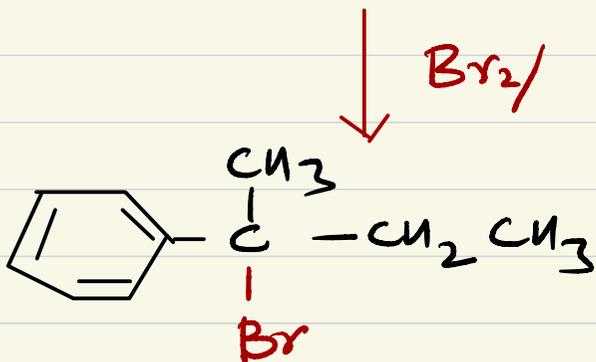


(benzylic)

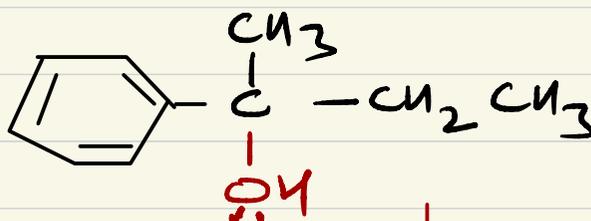
. bromination

. selective & . FR (stability of FR)

benzylic ~ allylic ~ 3° > 2° > 1°

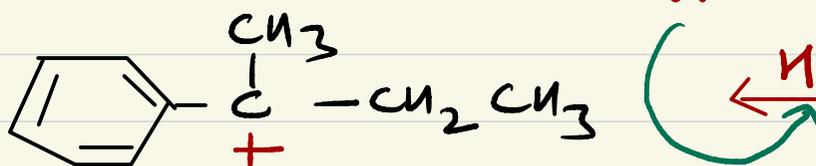
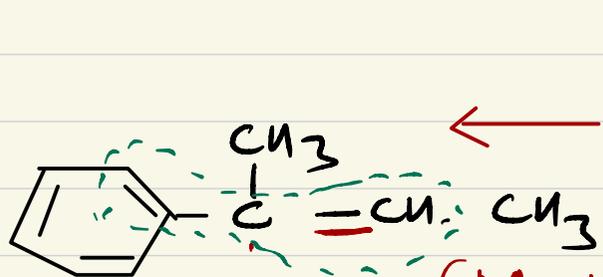


$\xrightarrow[\text{SN}]{\text{KOH aq}}$



$\xrightarrow[\Delta]{\text{H}^+}$

Dehydration in alcohol



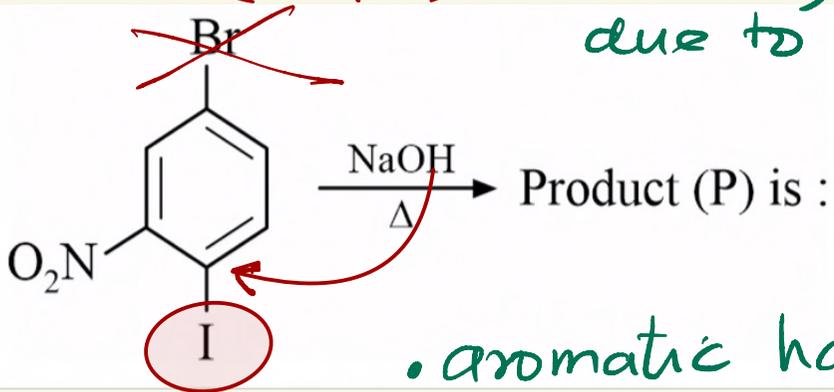
3°; benzylic

(Major): stability

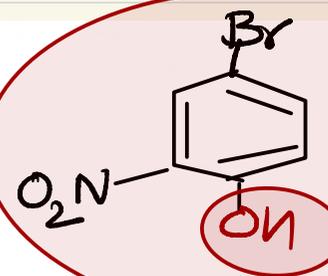
due to conjugation

highly carbocation

20.



(activated SN)



. aromatic halide but ?

observe that -NO<sub>2</sub>

group is at 'o' to I,

NCEERT Questions. Try yourself.

1. Predict all the alkenes that would be formed by dehydrohalogenation of the following halides with sodium ethoxide in ethanol and identify the major alkene:  
(i) 1-Bromo-1-methylcyclohexane (ii) 2-Chloro-2-methylbutane  
(iii) 2,2,3-Trimethyl-3-bromopentane.
2. How will you bring about the following conversions?  
(i) Ethanol to but-1-yne (ii) Ethane to bromoethene (iii) Propene to 1-nitropropane (iv) Toluene to benzyl alcohol (v) Propene to propyne  
(vi) Ethanol to ethyl fluoride (vii) Bromomethane to propanone (viii) But-1-ene to but-2-ene (ix) 1-Chlorobutane to n-octane (x) Benzene to biphenyl.
3. Explain why  
(i) the dipole moment of chlorobenzene is lower than that of cyclohexyl chloride?  
(ii) alkyl halides, though polar, are immiscible with water?  
(iii) Grignard reagents should be prepared under anhydrous conditions?  
Give the uses of freon 12, DDT, carbon tetrachloride and iodoform.

4. Out of  $C_6H_5CH_2Cl$  and  $C_6H_5CHClC_6H_5$ , which is more easily hydrolysed by aqueous KOH?

5. *p*-Dichlorobenzene has higher m.p. and solubility than those of *o*- and *m*-isomers. Discuss.

6. How the following conversions can be carried out?

(i) Propene to propan-1-ol

(ii) Ethanol to but-1-yne

(iii) 1-Bromopropane to 2-bromopropane

(iv) Toluene to benzyl alcohol

(v) Benzene to 4-bromonitrobenzene

(vi) Benzyl alcohol to 2-phenylethanoic acid

(vii) Ethanol to propanenitrile

(viii) Aniline to chlorobenzene

(ix) 2-Chlorobutane to 3, 4-dimethylhexane

(x) 2-Methyl-1-propene to 2-chloro-2-methylpropane

7. The treatment of alkyl chlorides with aqueous KOH leads to the formation of alcohols but in the presence of alcoholic KOH, alkenes are major products. Explain.

8. How the following conversions can be carried out?

Note: You can read Module upto Pg. 20 & attempt INE-A & B.

- (xi) Ethyl chloride to propanoic acid
- (xii) But-1-ene to n-butyliodide
- (xiii) 2-Chloropropane to 1-propanol
- (xiv) Isopropyl alcohol to iodoform
- (xv) Chlorobenzene to *p*-nitrophenol
- (xvi) 2-Bromopropane to 1-bromopropane
- (xvii) Chloroethane to butane
- (xviii) Benzene to diphenyl
- (xix) *tert*-Butyl bromide to isobutyl bromide
- (xx) Aniline to phenylisocyanide

9. Primary alkyl halide  $C_4H_9Br$  (a) reacted with alcoholic KOH to give compound (b). Compound (b) is reacted with HBr to give (c) which is an isomer of (a). When (a) is reacted with sodium metal it gives compound (d),  $C_8H_{18}$  which is different from the compound formed when n-butyl bromide is reacted with sodium. Give the structural formula of (a) and write the equations for all the reactions.

10. What happens when

- (i) n-butyl chloride is treated with alcoholic KOH,
- (ii) bromobenzene is treated with Mg in the presence of dry ether,
- (iii) chlorobenzene is subjected to hydrolysis,
- (iv) ethyl chloride is treated with aqueous KOH,
- (v) methyl bromide is treated with sodium in the presence of dry ether,
- (vi) methyl chloride is treated with KCN?

# THANK

<b>39</b> 88.906 3338 1.1 1526 <b>Y</b> [Kr]4d5s <sup>2</sup> 4.47 3	<b>8</b> 15.999 -182.82 3.5 -222.65 <b>O</b> [He]2s <sup>2</sup> 2p <sup>4</sup> 1.43 -2	<b>92</b> 238.029 4134 1.2 1132 <b>U</b> [Rn]5f <sup>3</sup> 6d7s <sup>2</sup> 19.0 3,4,5,6
---	---	--

