Rules for Drawing Resonating Structures - I

Course on General Organic Chemistry for Class XI

SURENDRA K MISHRA • Lesson 6 • Aug 14, 2021

Note :

(1)

C = C
sp²

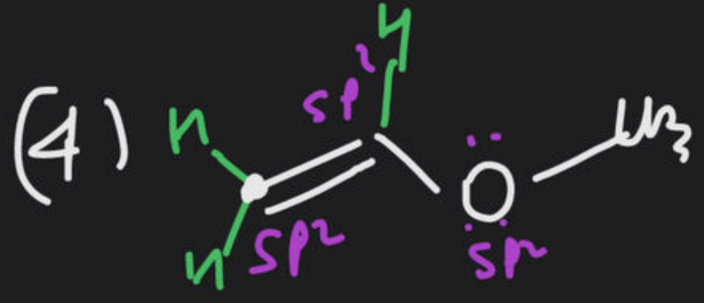
C ≡ C
sp
linear

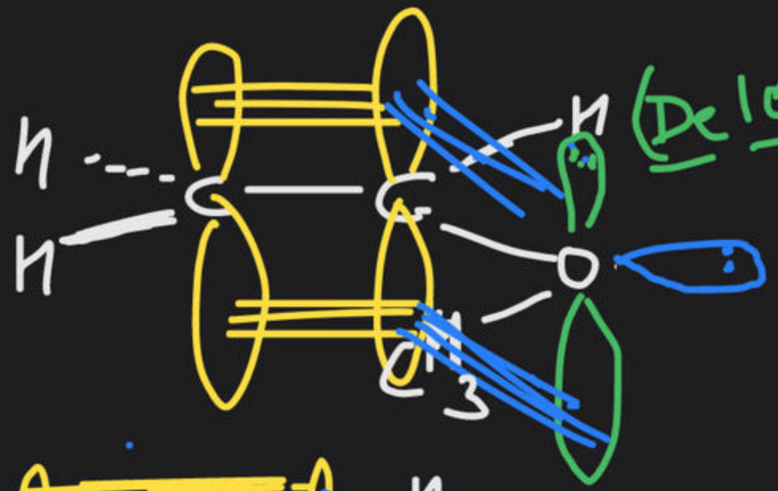
— C —
sp³

C = O

N
sp²

(4)

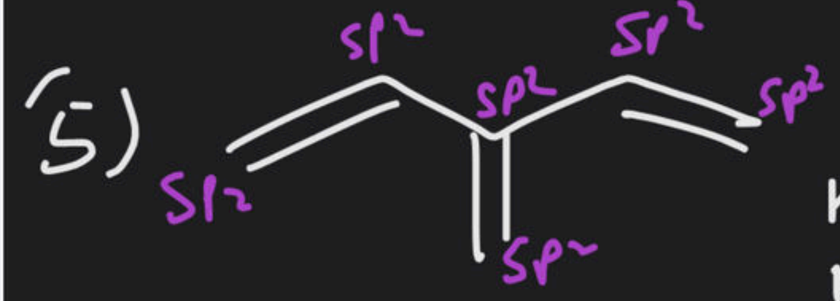


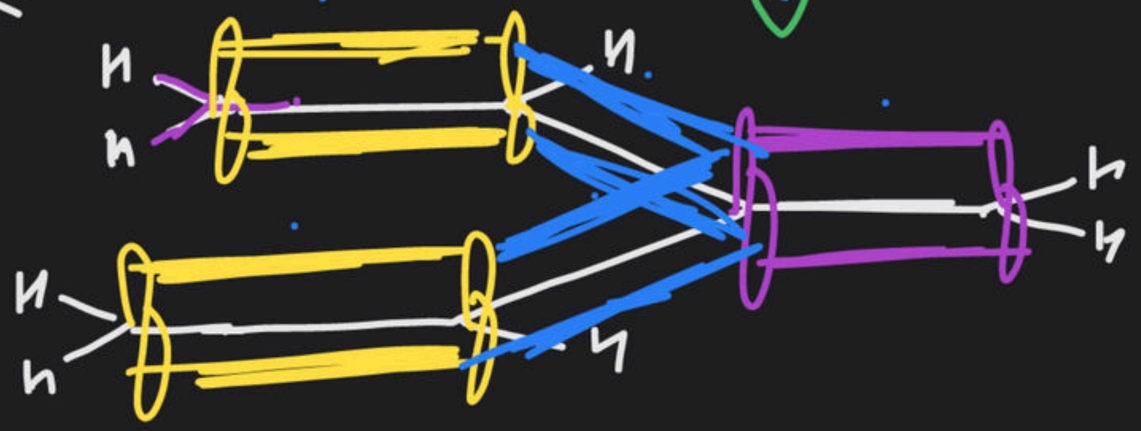


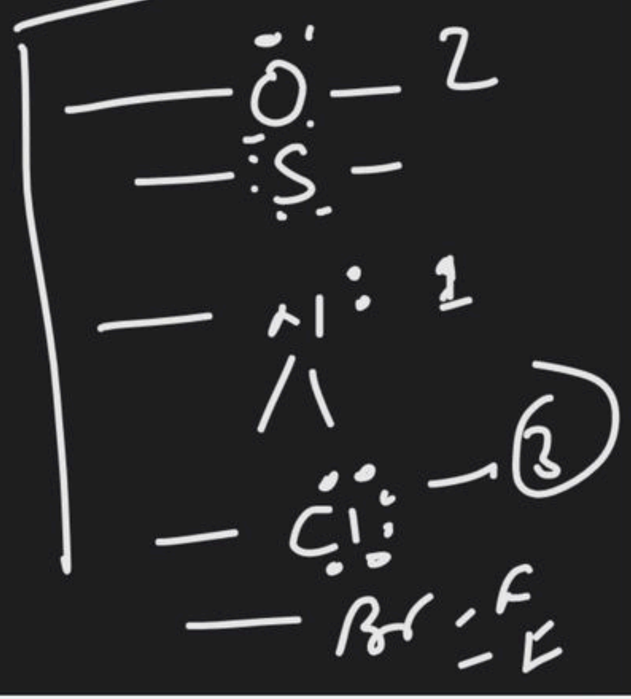
(Delocalised LP).

(Localised LP)

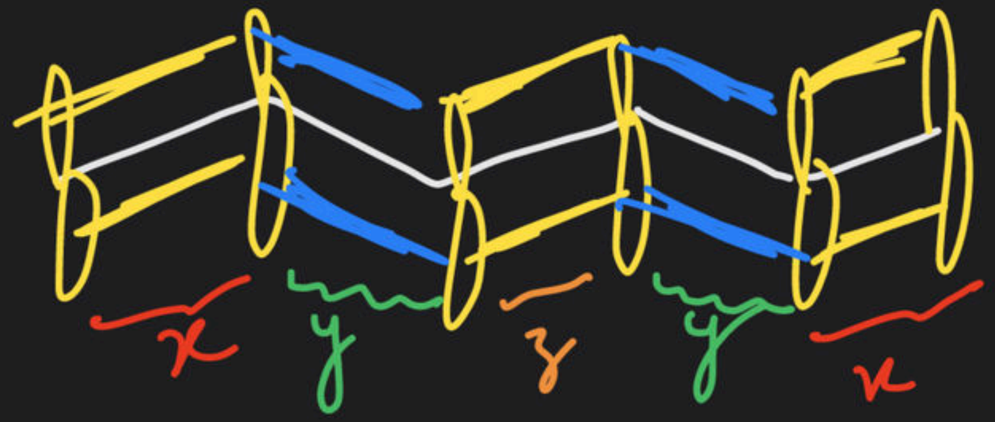
(5)







(6)

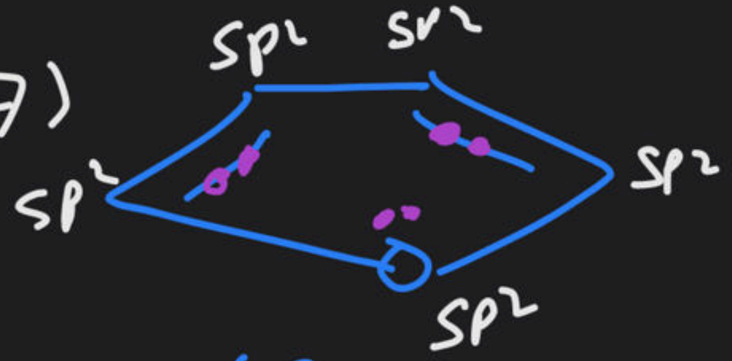


|| paibital = 6

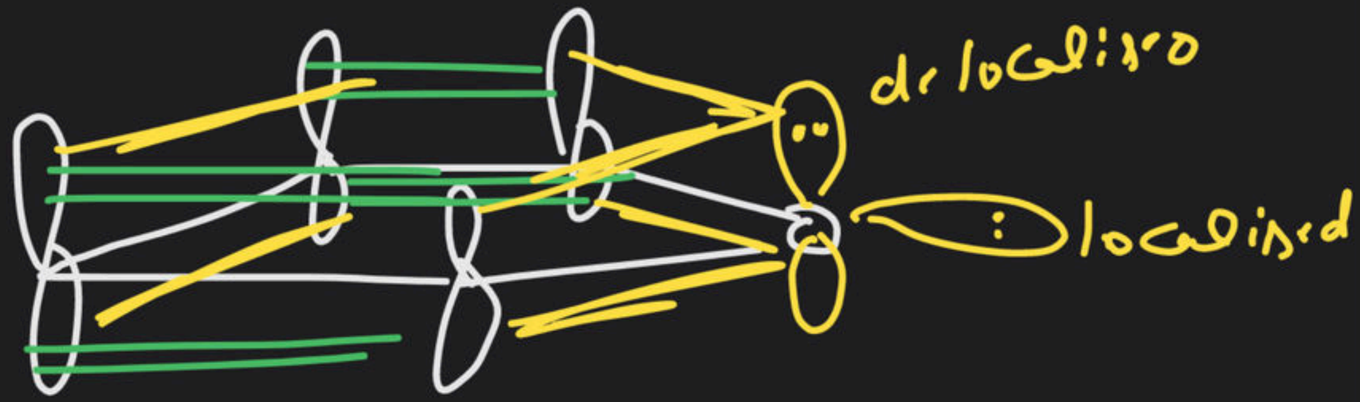
π e⁻s = porbital

e⁻s = 6

(7)



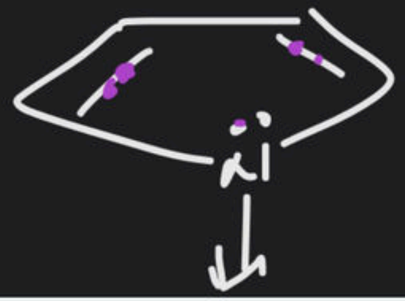
(furan)

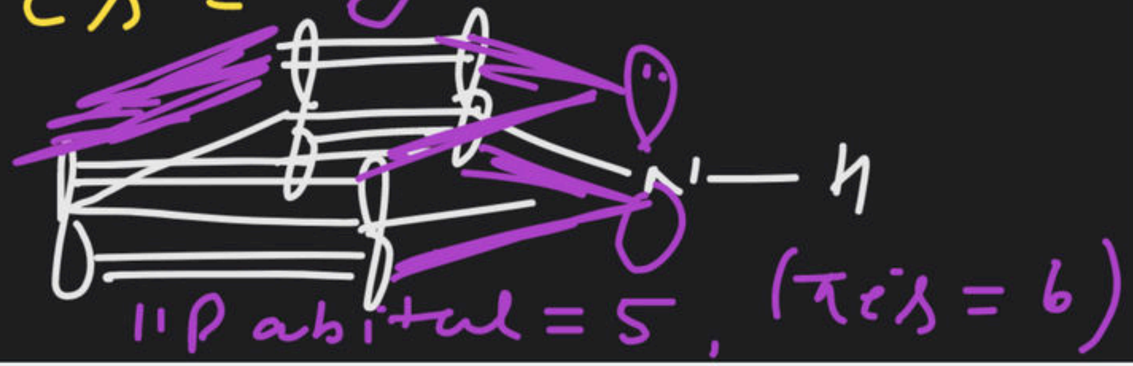


|| paibital = 5

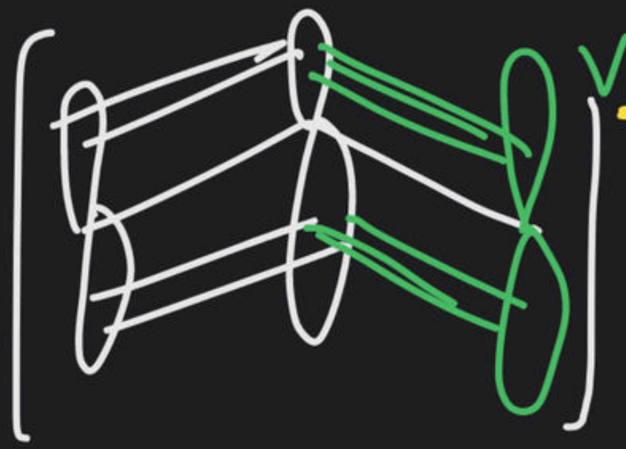
π/p e⁻s = 6

(8)





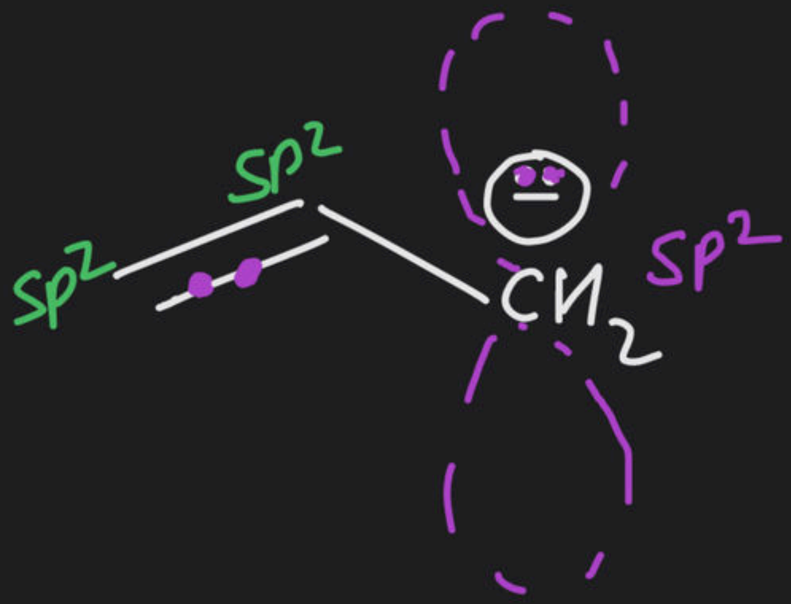
(9)

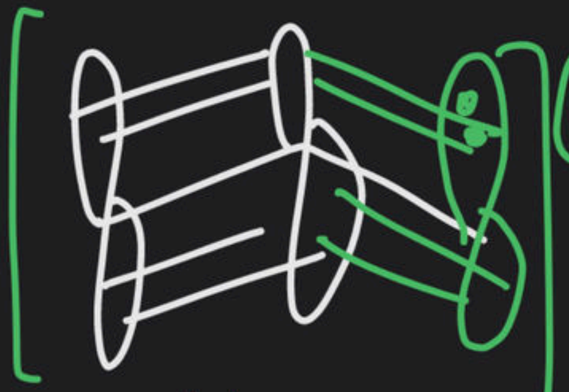


No of p orbital = 3

No of π e⁻s = 2

(10)





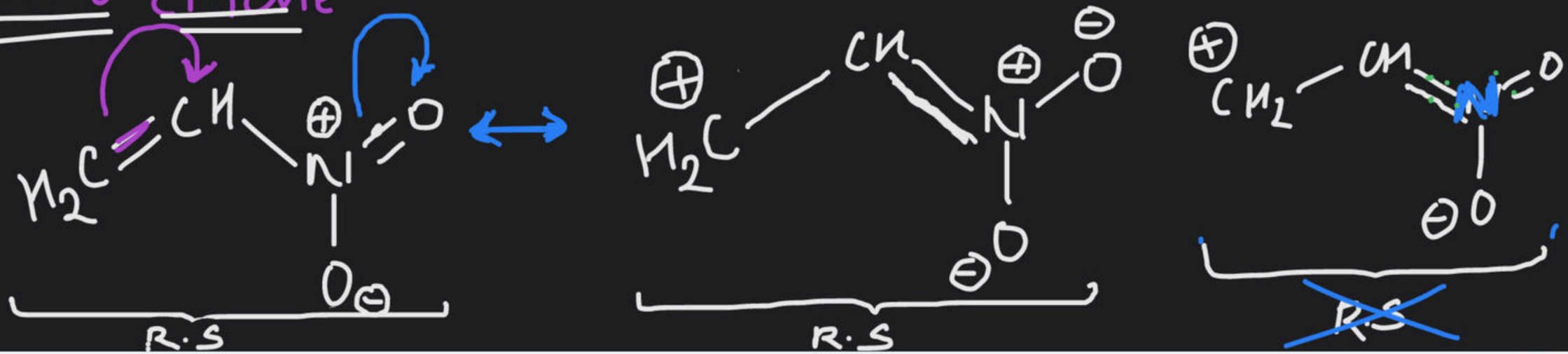
No of p orbital = 3

No of π e⁻s =

(#) Rules for Drawing Resonating Structure

Rule-1: Each RS must have valid structure/Should not violate octet Rule

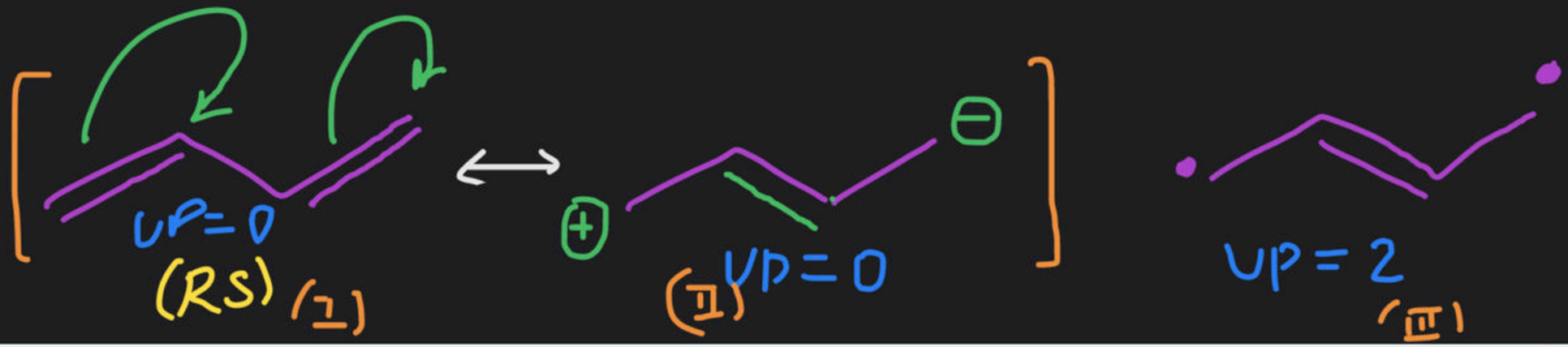
Ex (1) Nitro-Ethene



III is not valid Resonating structure because it's violating octet Rule (N can't be penta valent)

Rule-2 Each RS must have same No. of unpaired electrons.

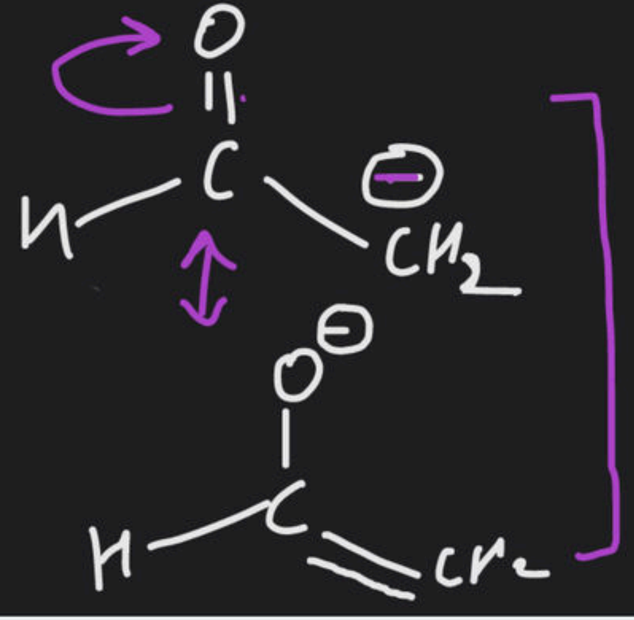
Ex-2: Buta-1,3-diene



III is not RS with RS-I & RS-II due to having diff. No of unpaired e⁻s.

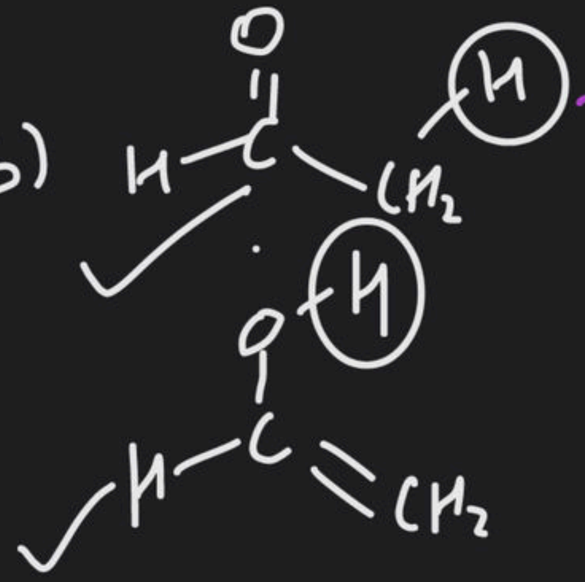
Rule-3 Nucleii of each atom Must be fix in each RS.

Ex:-3 (a)



Resonating Struc

(b)

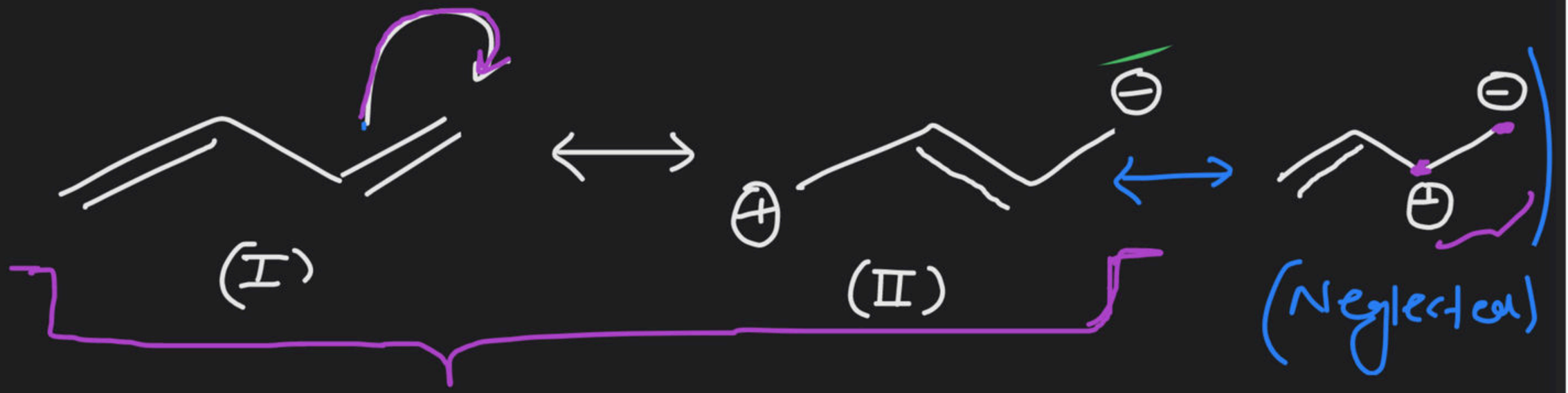


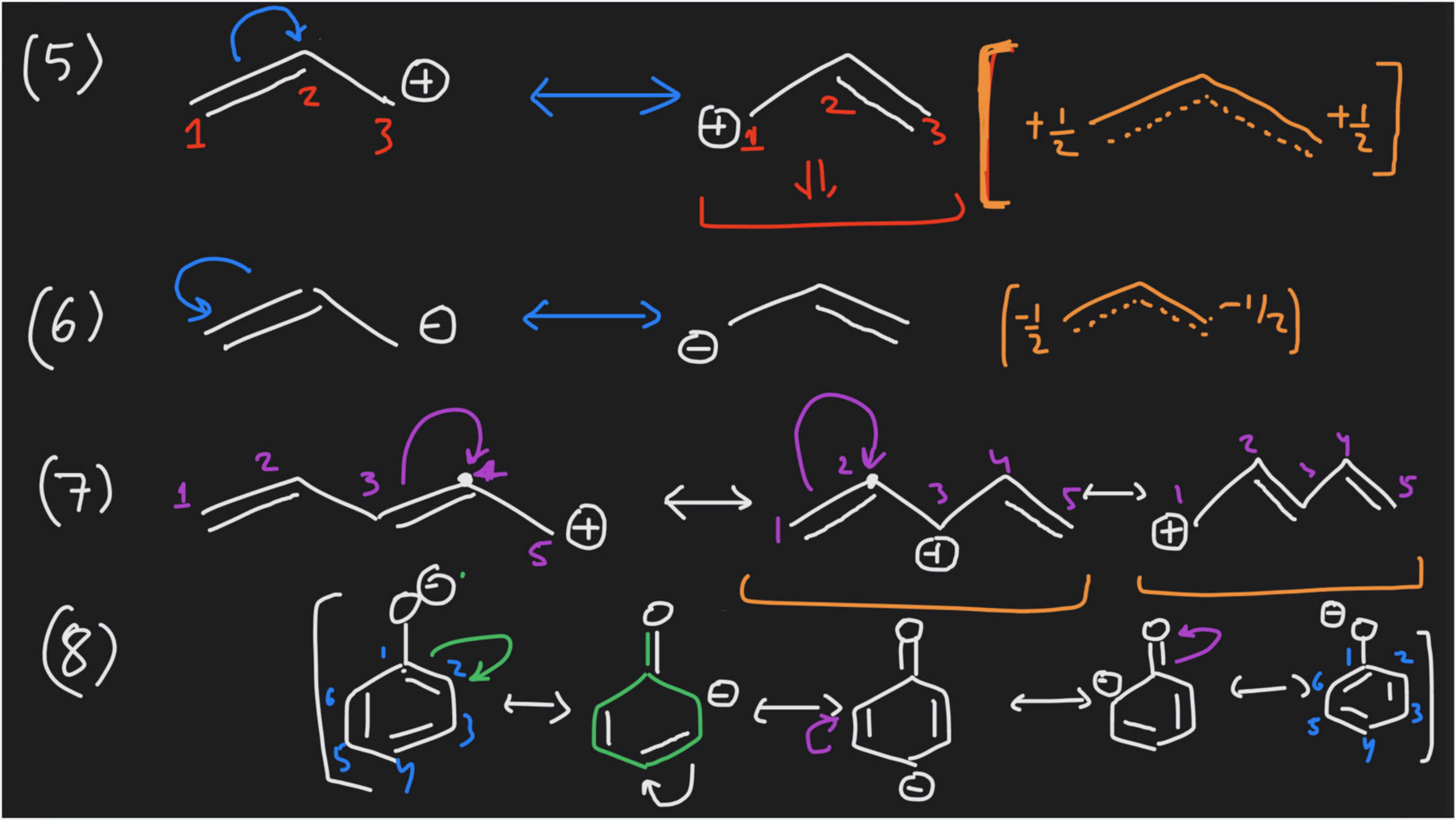
~~RS~~

Tauto-mers

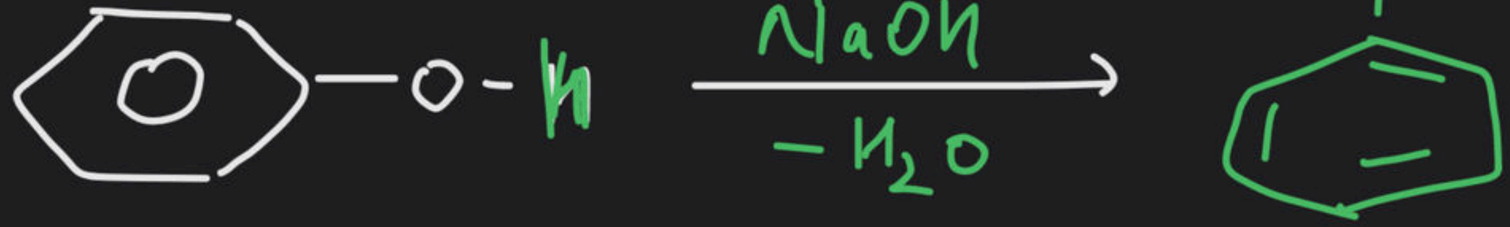
Rule-4 RS having unlike charges on adjacent carbon atom are usually neglected.

Ex-4:




(5)
1
2
3
+½
+½
(6)
-½
-½
(7)
1
2
3
4
5
(8)

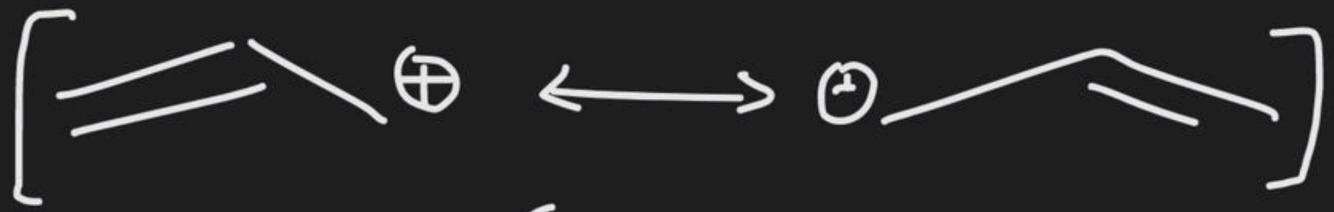
(#) $R-\underline{Cl}/\underline{Br}/\underline{I} \xrightarrow[SbCl_5 \text{ or}]{AgNO_3 \text{ or}} [R^{\oplus}]\ X^-$

(#) 

Find Total number of RS of product of following Reaction.

(9) 

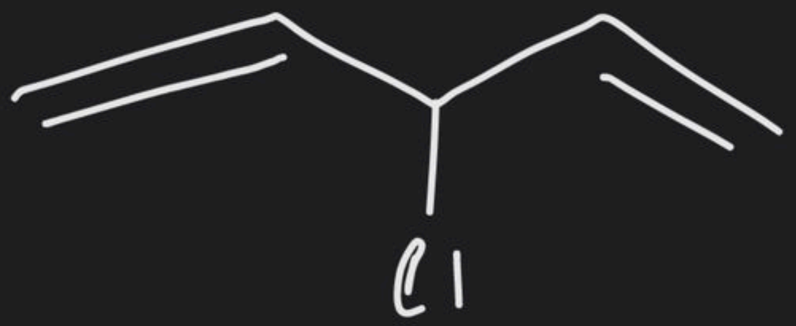
Resonance hybrid



(2)

(10) 

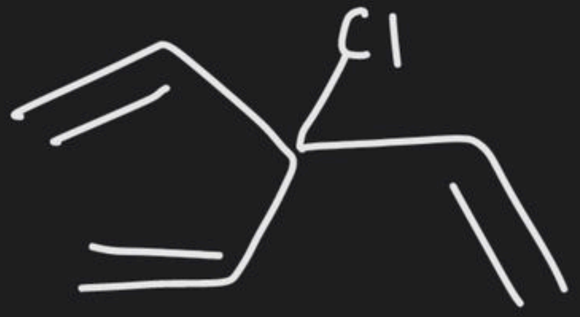
$\xrightarrow{AlBr_3}$

(11) 

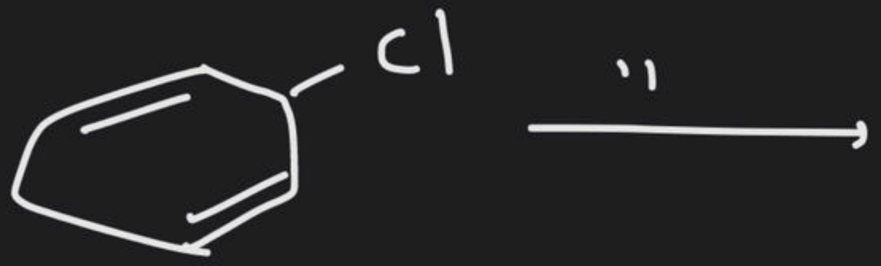
$\xrightarrow{AlCl_3}$

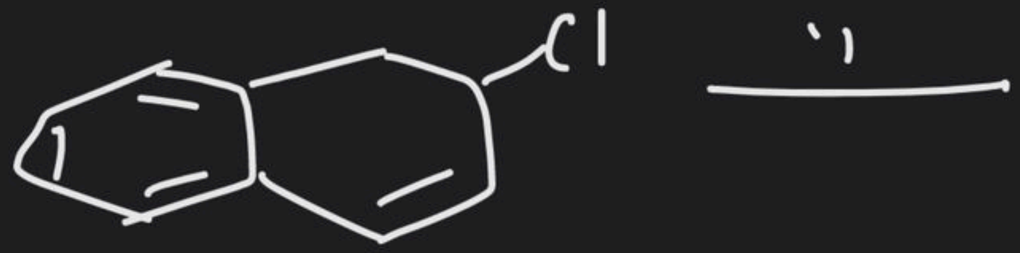
(12) 

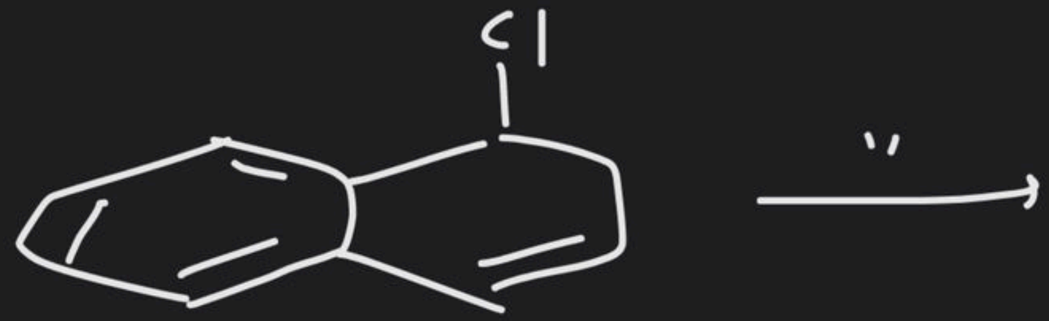
$\xrightarrow{AlCl_3}$

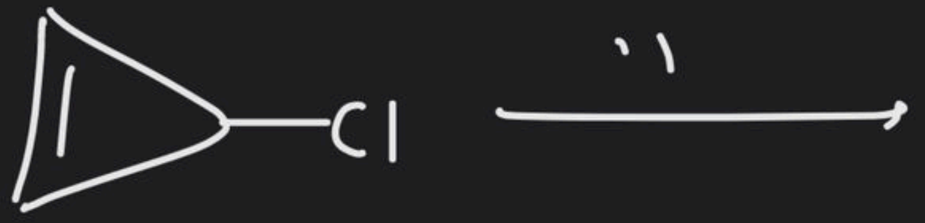
(13) 

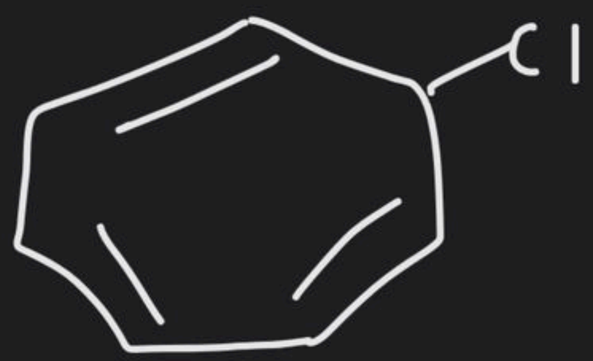
$\xrightarrow{H}$

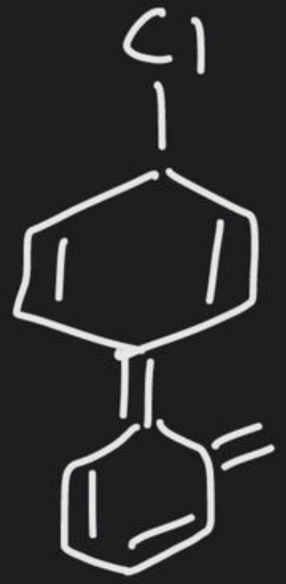
(14) 

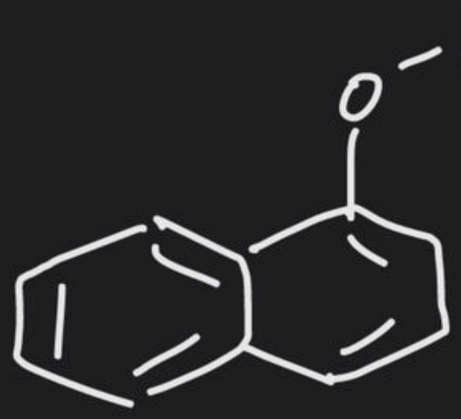
(15) 

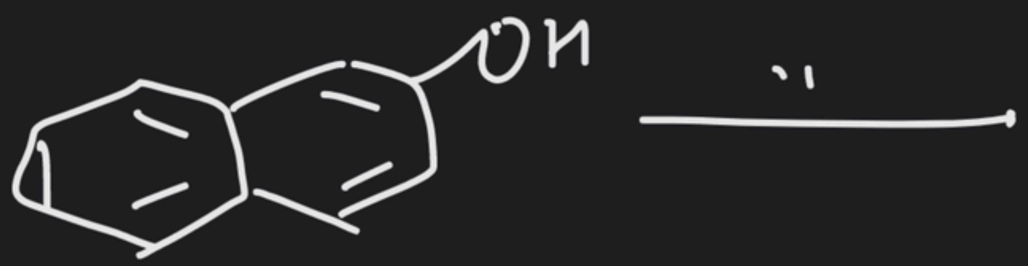
(16) 

(17) 

(18) 

(19) 

(20) 

(21) 

Question
from NikitaSing...

Pranaam sir