

Orbital Energy Diagram for Organic Compounds

Course on General Organic Chemistry for Class XI

Viva

(1) sp^2 Carbon unhybridised orbital = 1

(2) SP = -2

(3) sp^3 Carbon zero π Bond =

(4) sp² — 3σ & 1π

(S) $\text{SP}^2 \rightarrow \text{BF} = 120^\circ$

⑥ CD_3CH_3

$$(7) \quad c u_3 < c f_3$$

(8)

_____ ion _____ hydrolytic

(9)

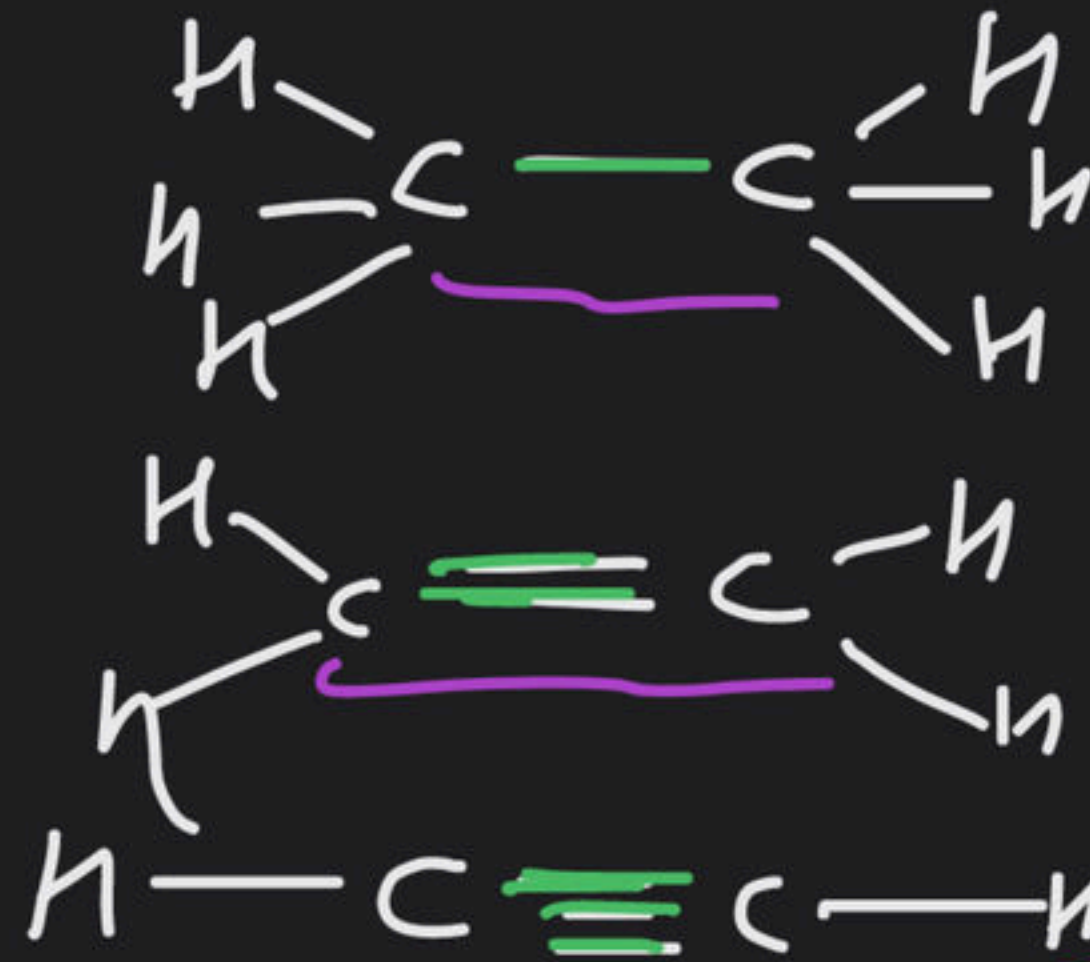
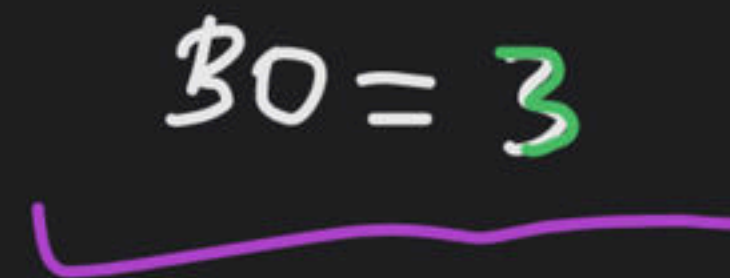
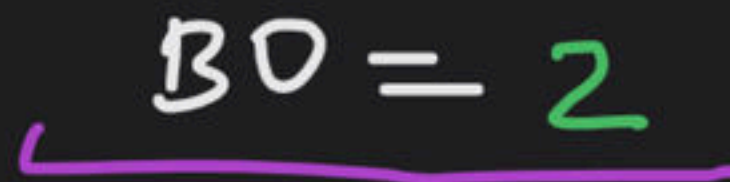
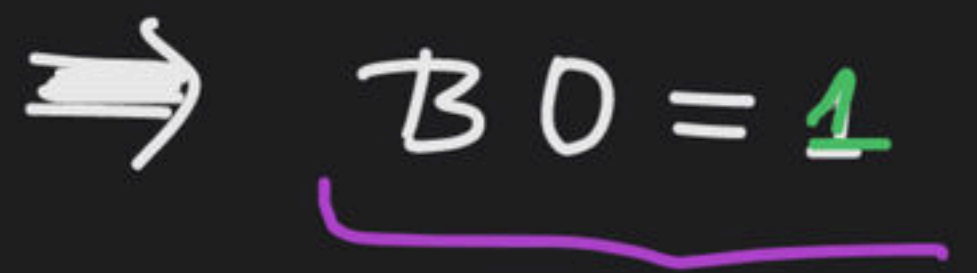
_____ Radical _____ Non polar solvent

(10)

Inductive is ~~strong~~ effect. (A) True

Inductive is permanent effect ^B

→ Bond order may be fractional
 → when one orbital overlaps with other 2 orbital
BO may be fractional:



BO = 1.5
 BO = 1.7
 BO = 1.33
 BO = 0.7
 BO = 1.9
 BO = 2.2
 BO = 2.75

Not easy to
draw structures
having Fractional
Bond orders

→

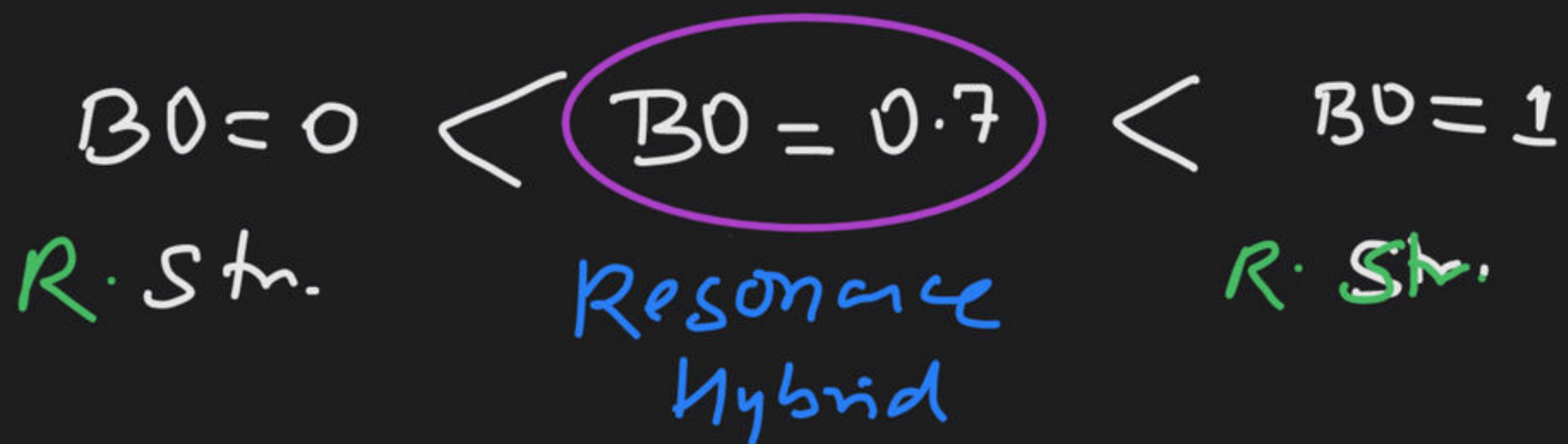
(#)

↓
 BO = 1
R. Str. ✓

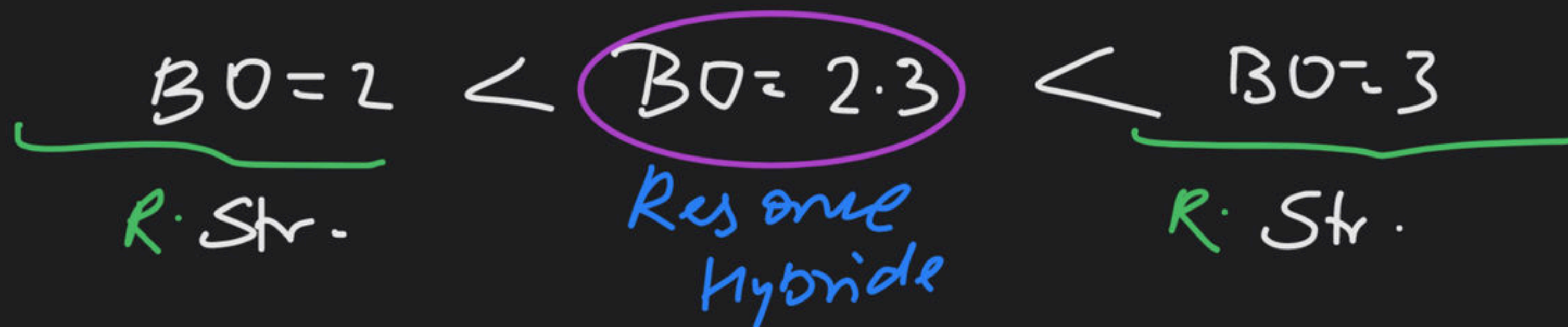
Real
 BO = 1.5
~~R. Str.~~

↓ Hypothetical
 BO = 2
R. Str. ✓

⇒



⇒



Resonance

⇒ When a single representation is not sufficient to express all properties of a compound, two or more than two representations are required to express all properties then that compound is known to have Resonance phenomena.

All these Representations are known as Resonating structures / Contributing structures / Canonical forms.

Note:- (1) Resonance Hybrid is Real Compound

(2) Resonating structures are Hypothetical.

(3) Resonating str. which contribute most in R. Hybrid is known as Most Contributing R-S.

(4) Resonating str. contributes in proportion of their stability

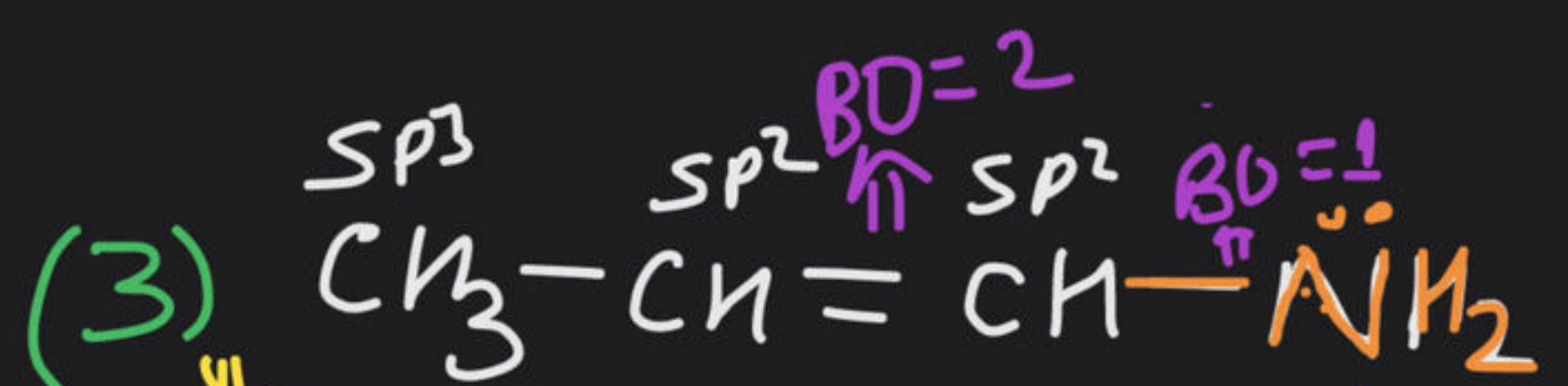
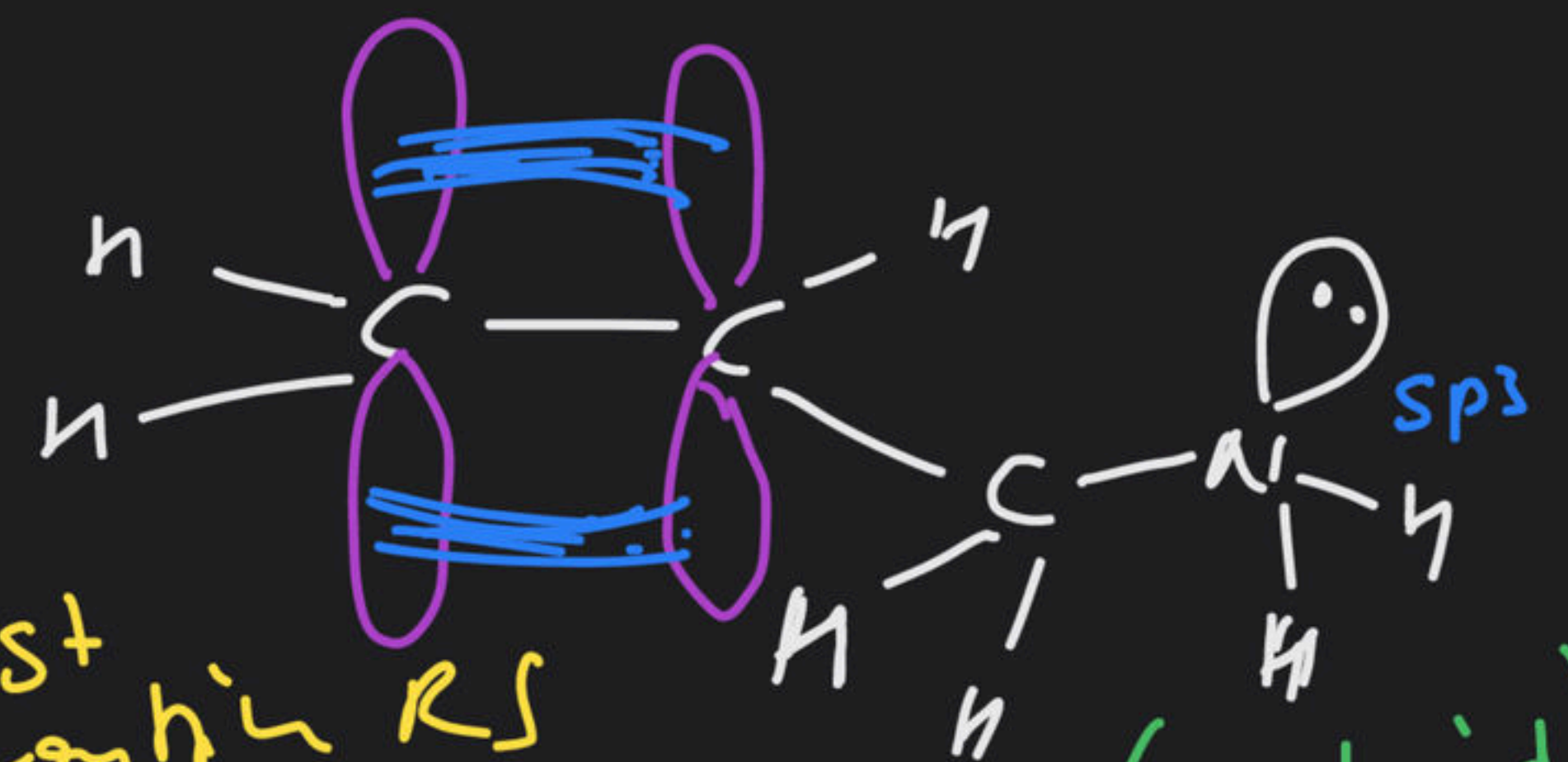
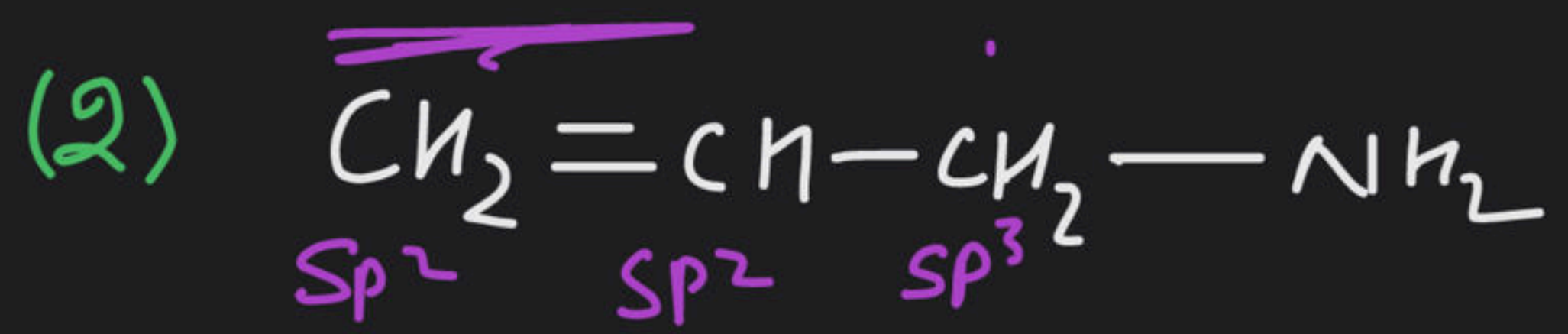
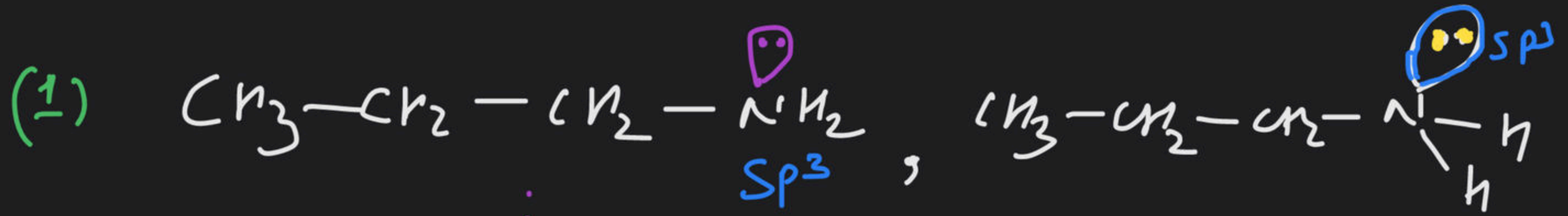
(5) Usually Compound having Resonance Phenomenon is represented by its most Contributing R-S.

Condition of Resonance

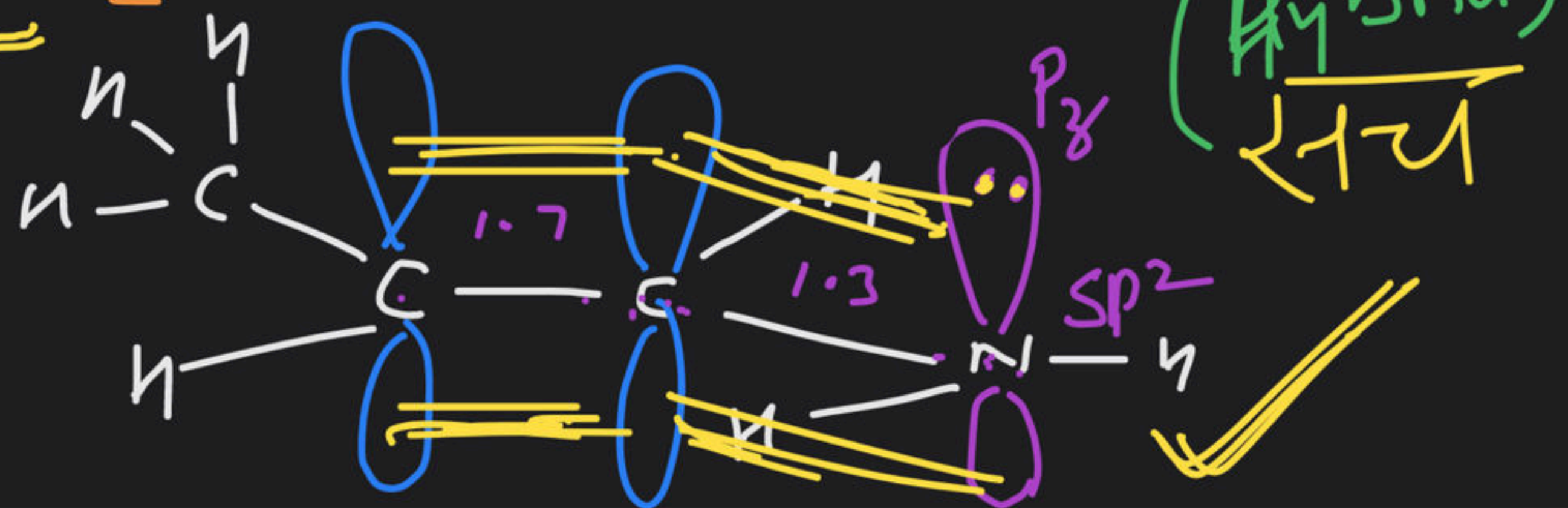
⇒ Compound must have at least 3 || Consecutive
orbitals. (2 || orbitals in case of ions)

Note (i) higher the magnitude of charge at any ion lesser would be its stability.

(ii) When singly bonded lone pair atom contains p orbital on adjacent atom then lone pair of that atom must be in p-orbital

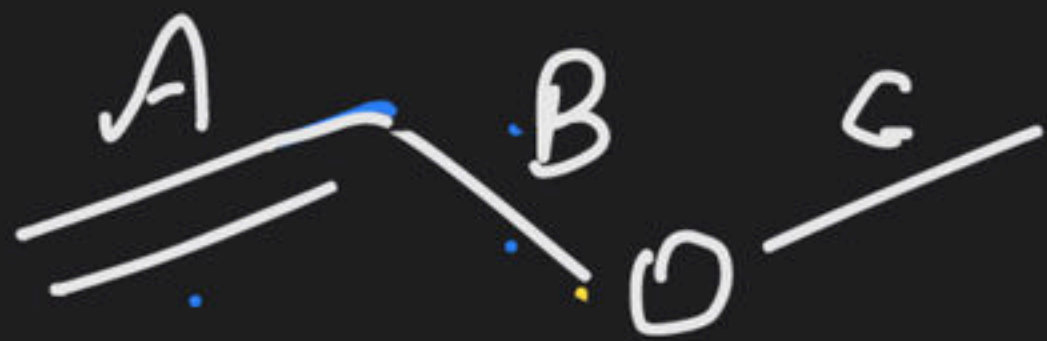


most contain RS



(Hybrid)
 $\leftarrow 1.21$

(4)



(5)

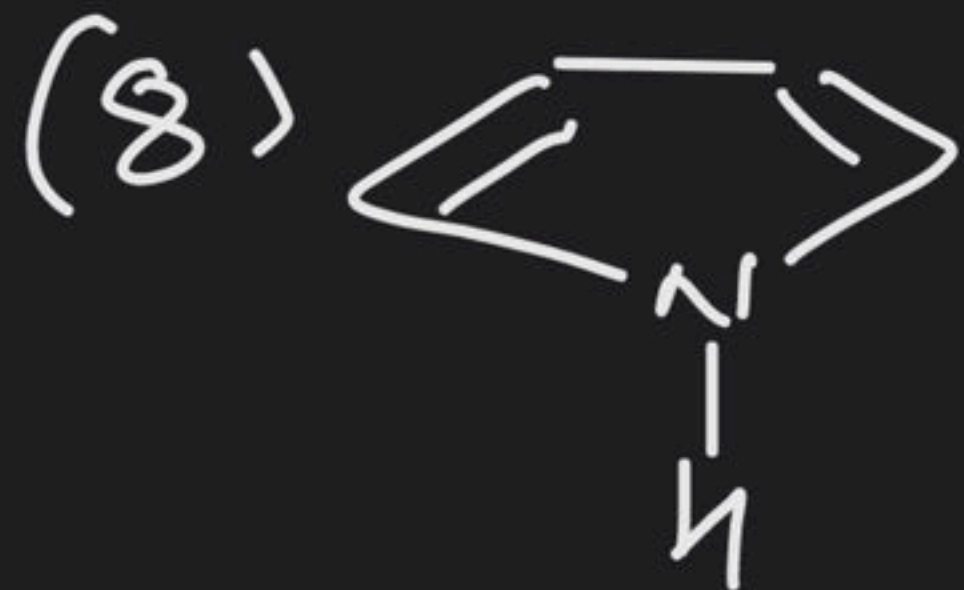


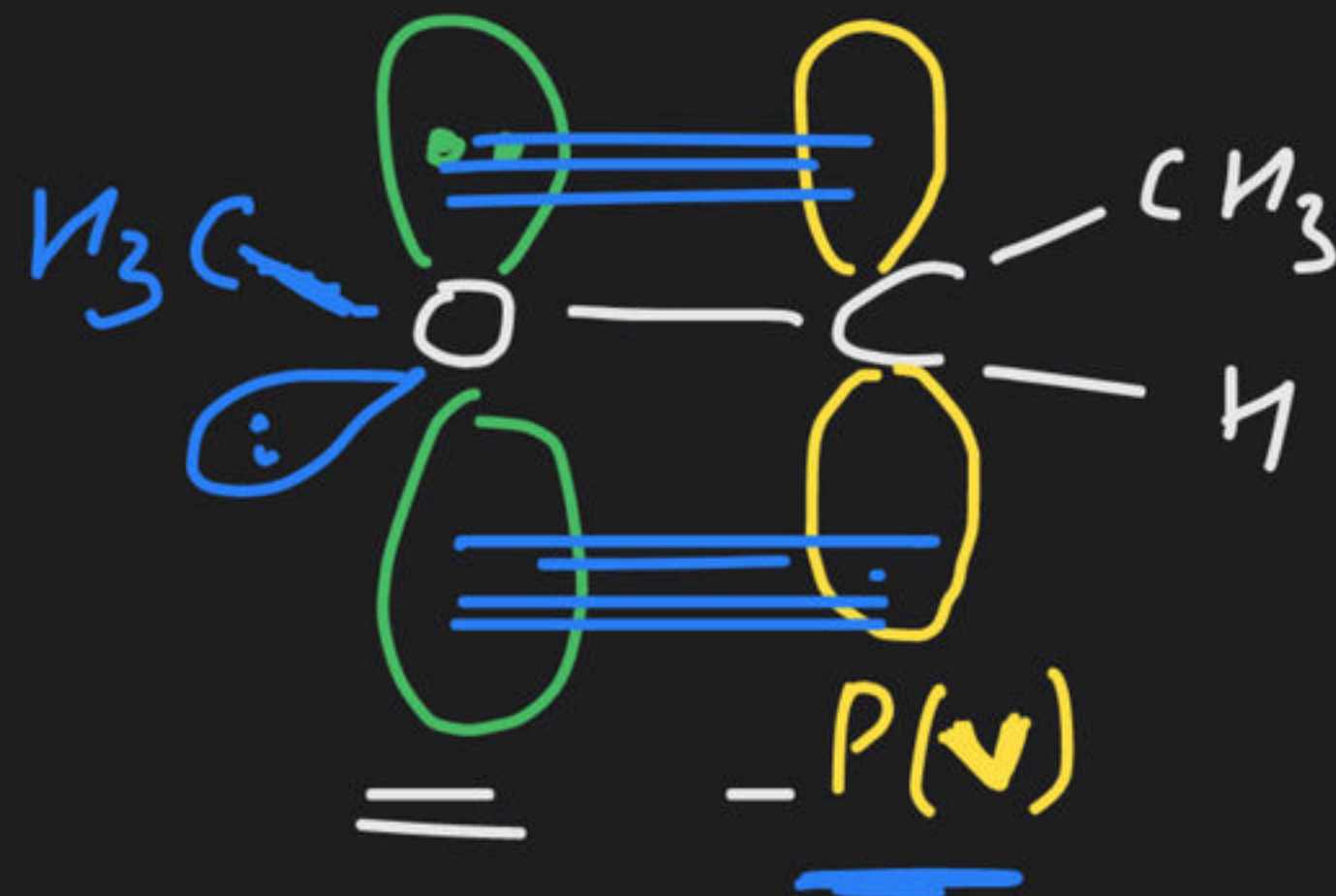
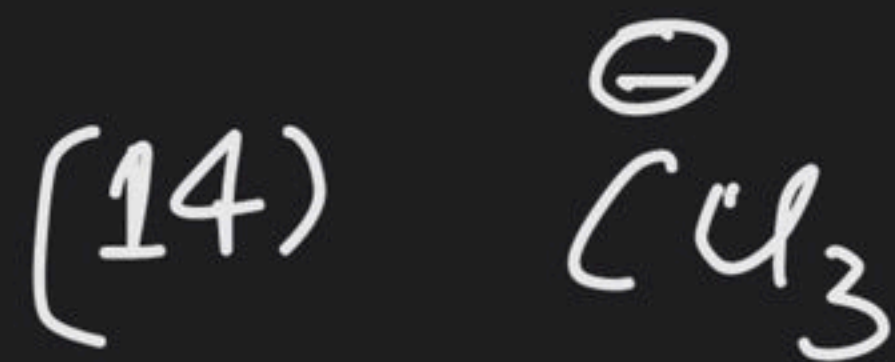
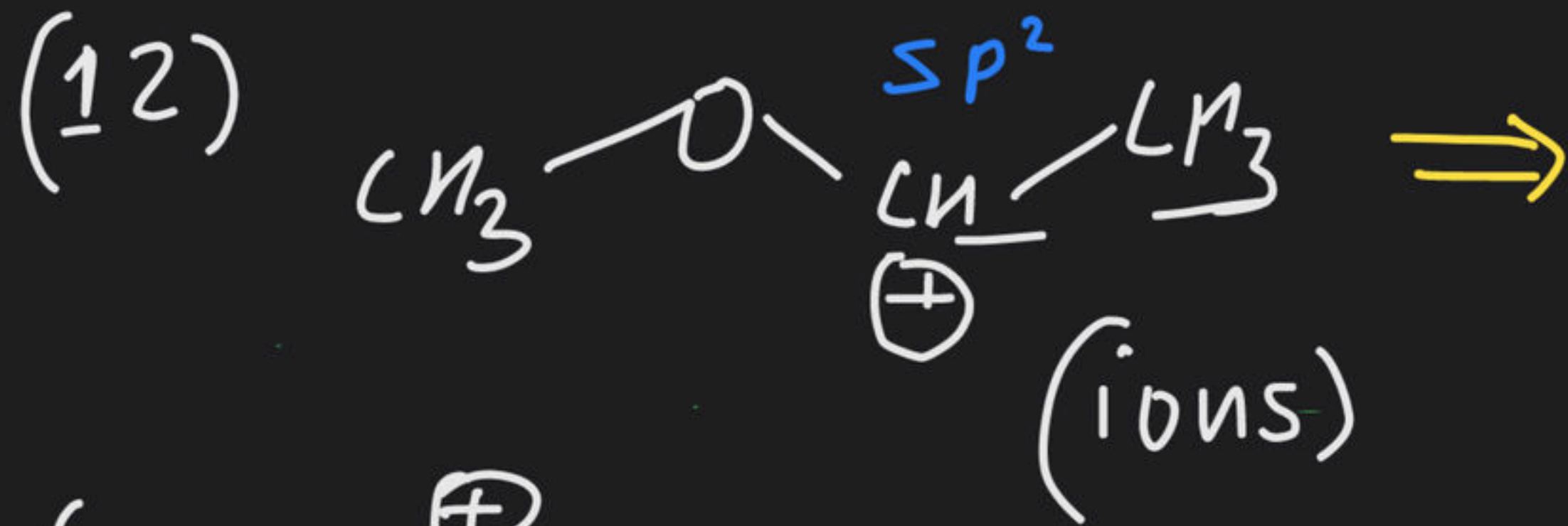
(6)



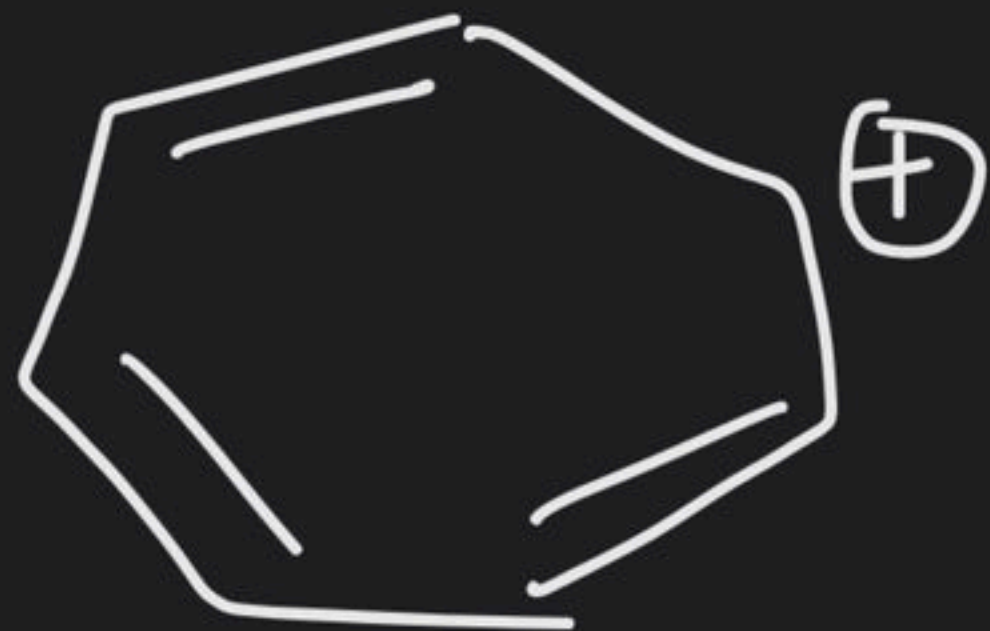
(7)







(16)



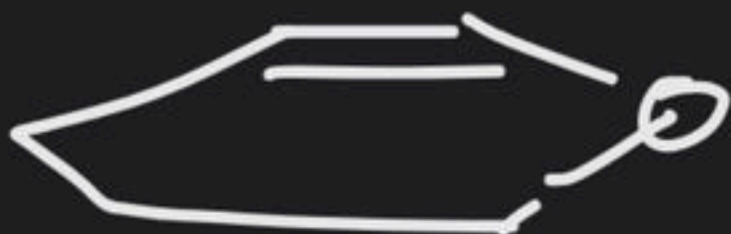
(17)



(18)



(19)



(20)





