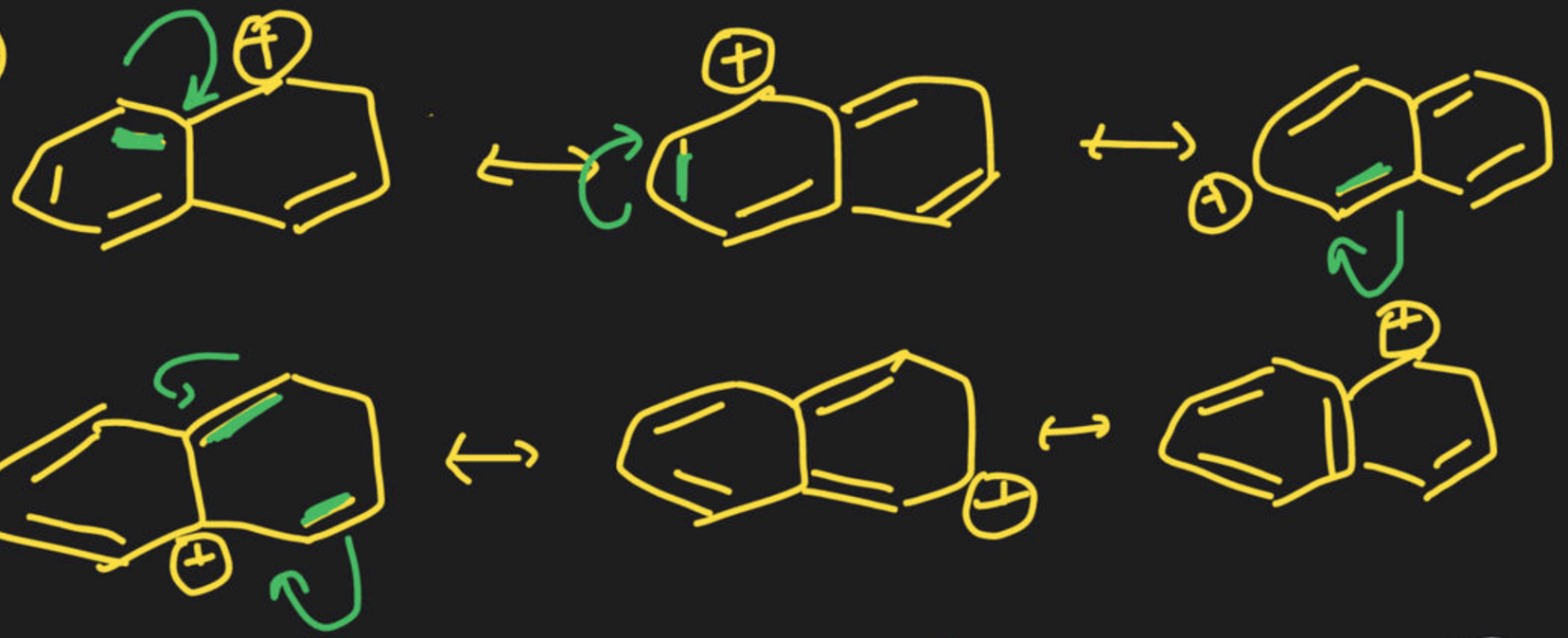
Rules for Stability of Resonating Structures and Resonance/Mesomeric Effect

Course on General Organic Chemistry for Class XI

SURENDRA K MISHRA • Lesson 8 • Aug 21, 2021

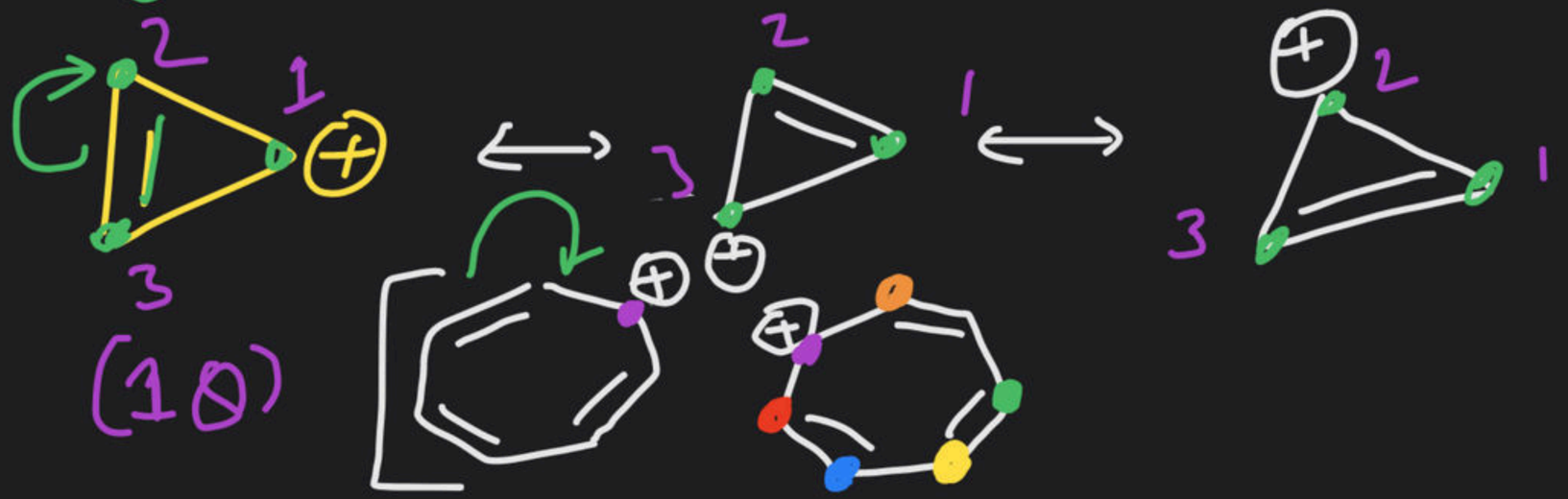
(#) NW (Total No. of RS)

(16)



(A) 5
(B) 6 ✓
(C) 7
(D) 8

(17)

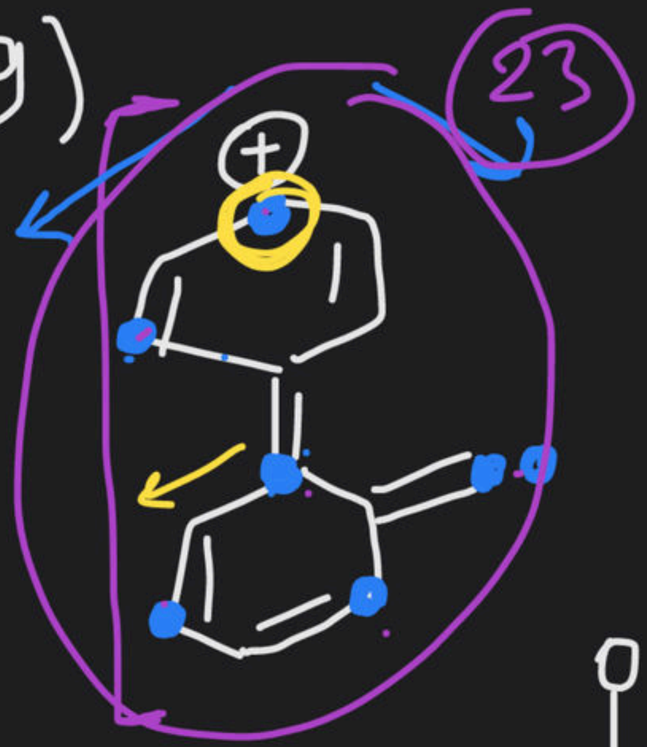


(18)

3
A 5
B 6
C 7
D 8

Draw

(19)

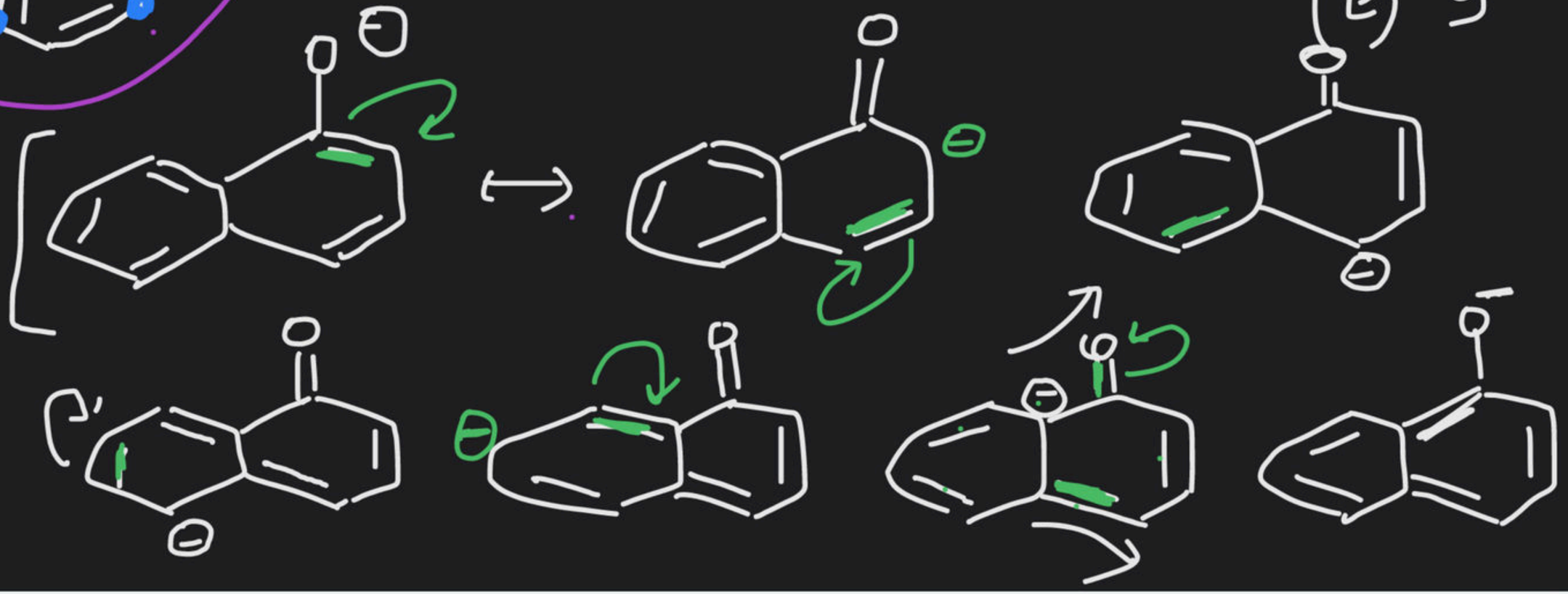


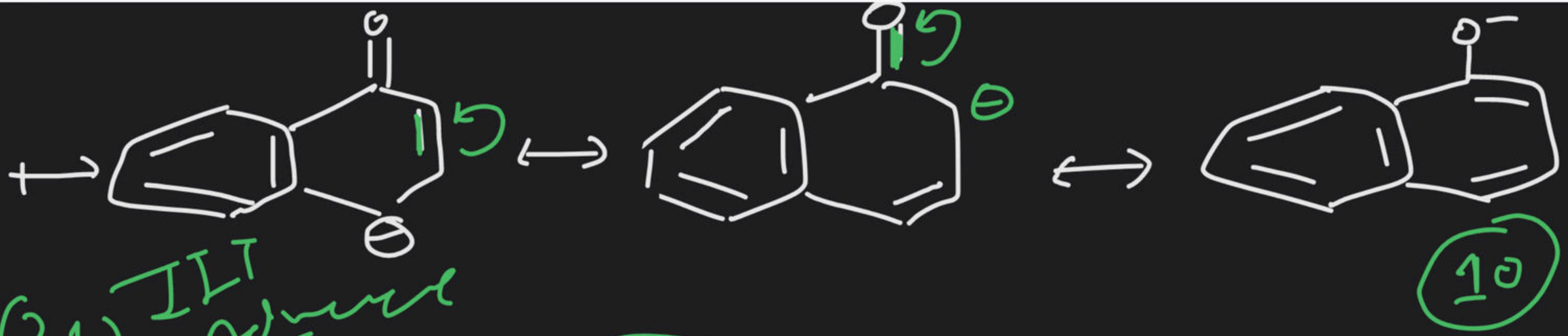
Anticlockwise (Clockwise)

$7 + 7 - 1 = 13$

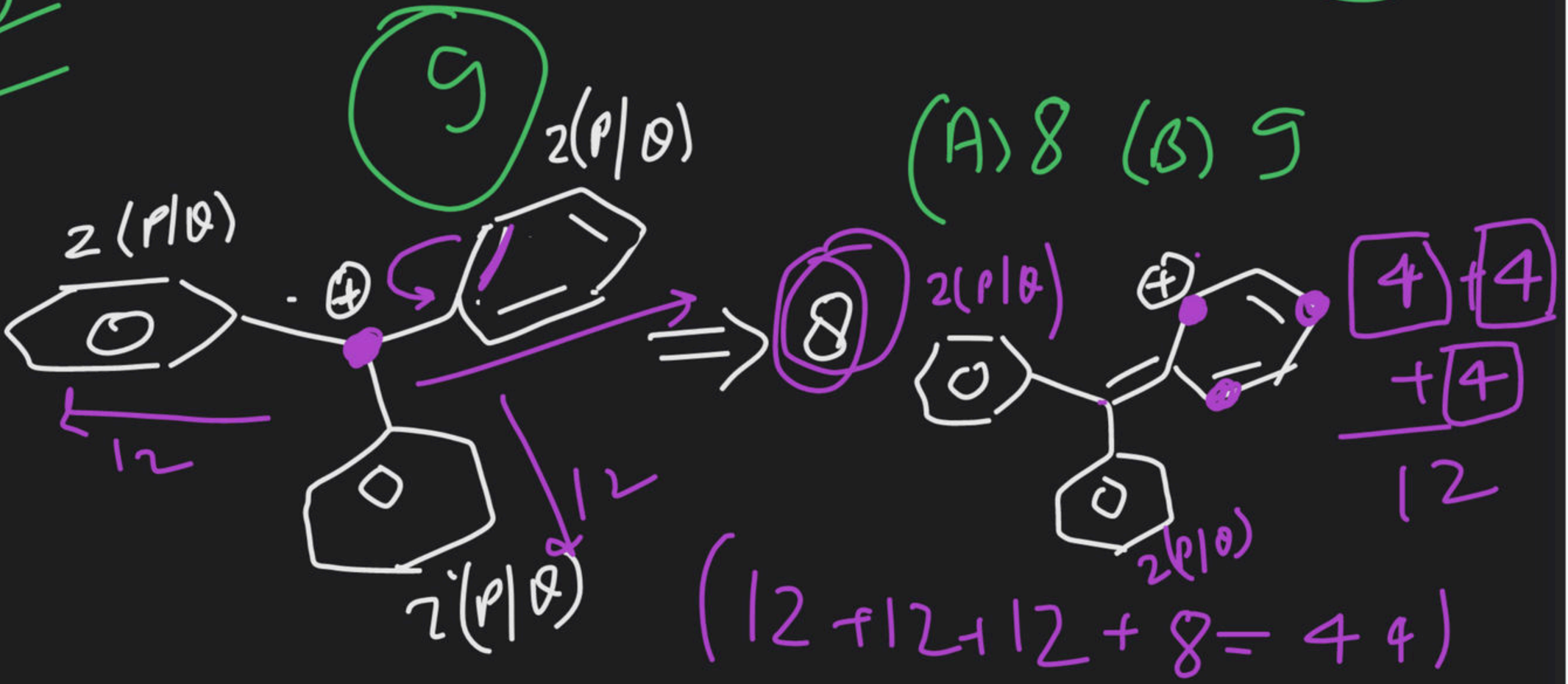
(A) 11
(B) 10
(C) 12
(D) 13
(E) 9

(20)





(21) IIT Advance



(22)

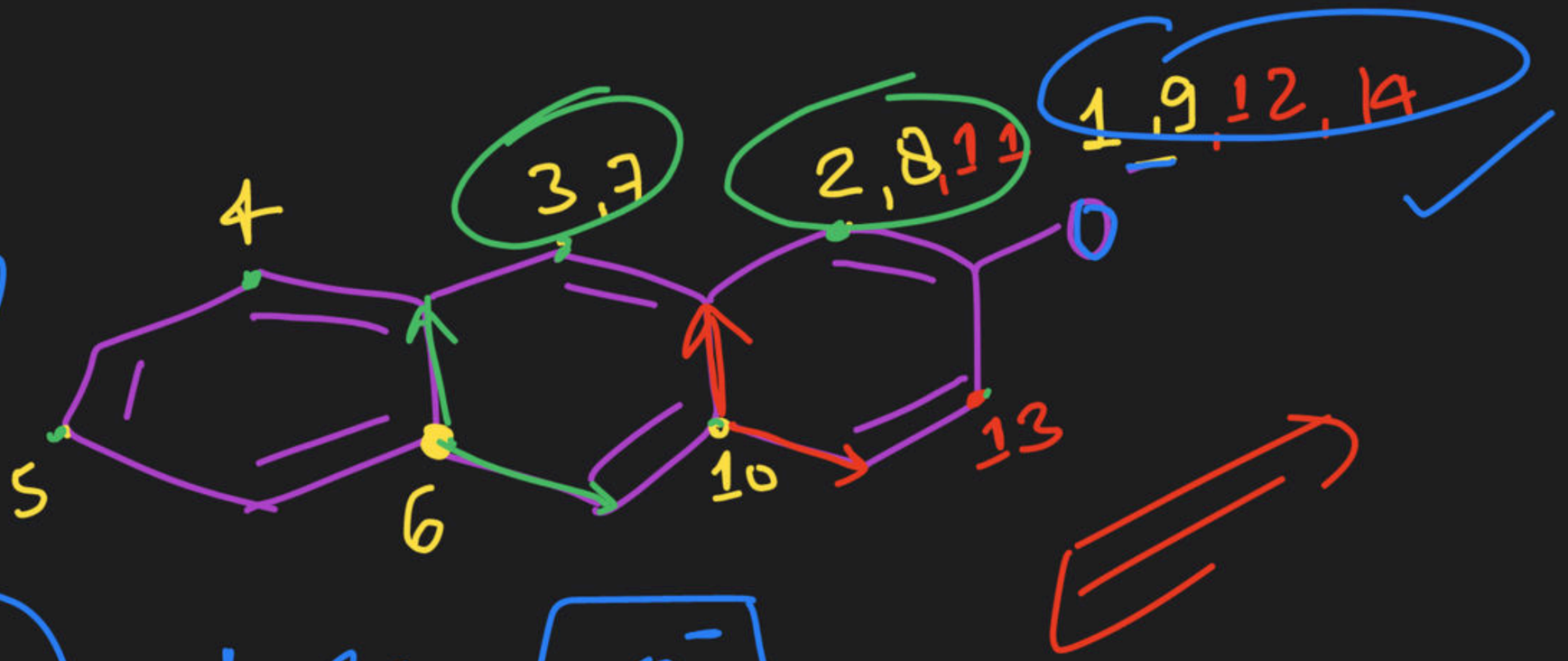
(A) 8 (B) 9

(12 + 12 + 12 + 8 = 44)

(24) 20

(25) 16

(26) 14



RS 4 RS O^-

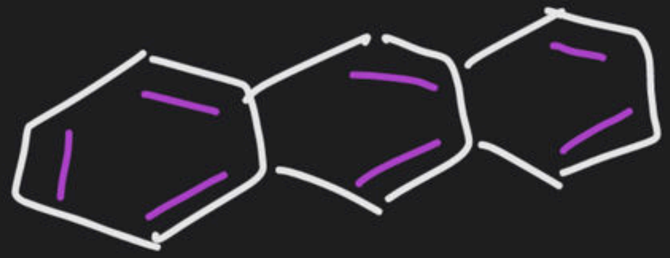
3 RS

(27) (5 RS)

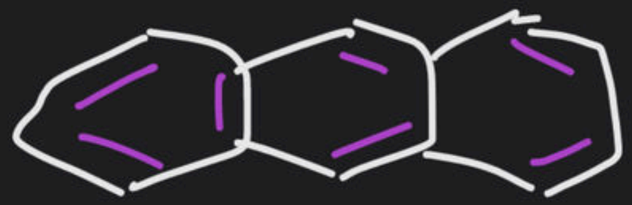
(30)

P

Q



P

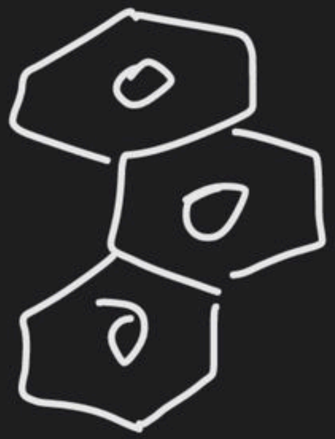


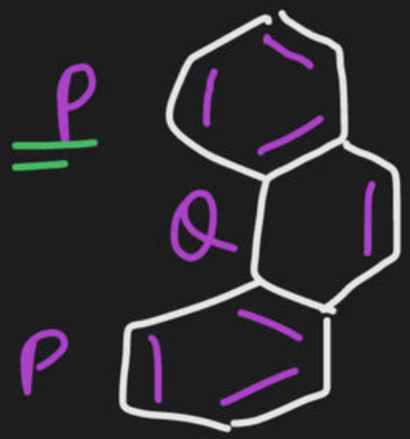
Q P

Q P

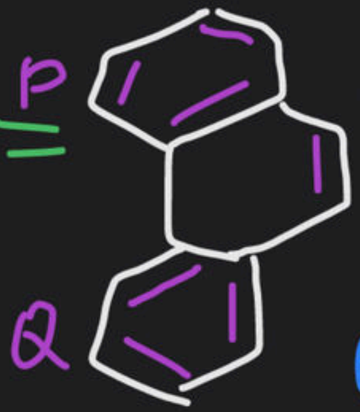
4

(31)

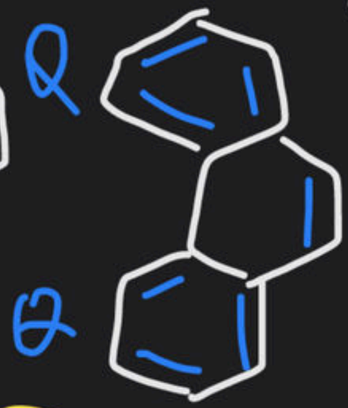




P Q P

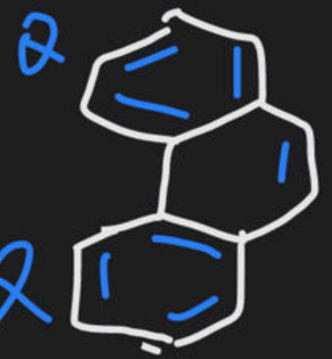


Q P



Q Q

5



Q Q

Q

P

(No. of RS) 2 3 4 5

(32) 2

(33) 4

(34) 8

(35) 16

(#) (Stability of RS)

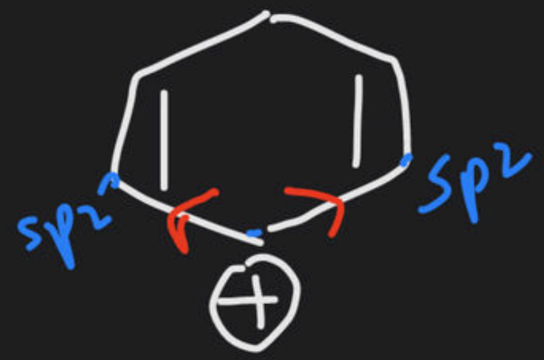
discuss

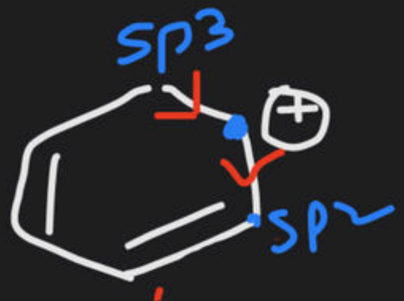
(10) 

Rule-1	Complete octet	Complete octet	Incomplete octet	Incomplete octet
Rule-2	×	×	×	×
Rule-3	😐	🙂	😊	☹

II > I > III > IV

(11)





$\Pi' > I$

Extended Conjugated Resonance

Cross Conjugated Resonance

ना

Because of Effect

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Note

Resonance, Extended conjugation & Cross Conjugation phenomena can't be used while deciding stability / contribution of RS.

P.T

$$\sin^2\theta + \cos^2\theta = 1$$

L.H.S $= \sin^2\theta + \cos^2\theta$

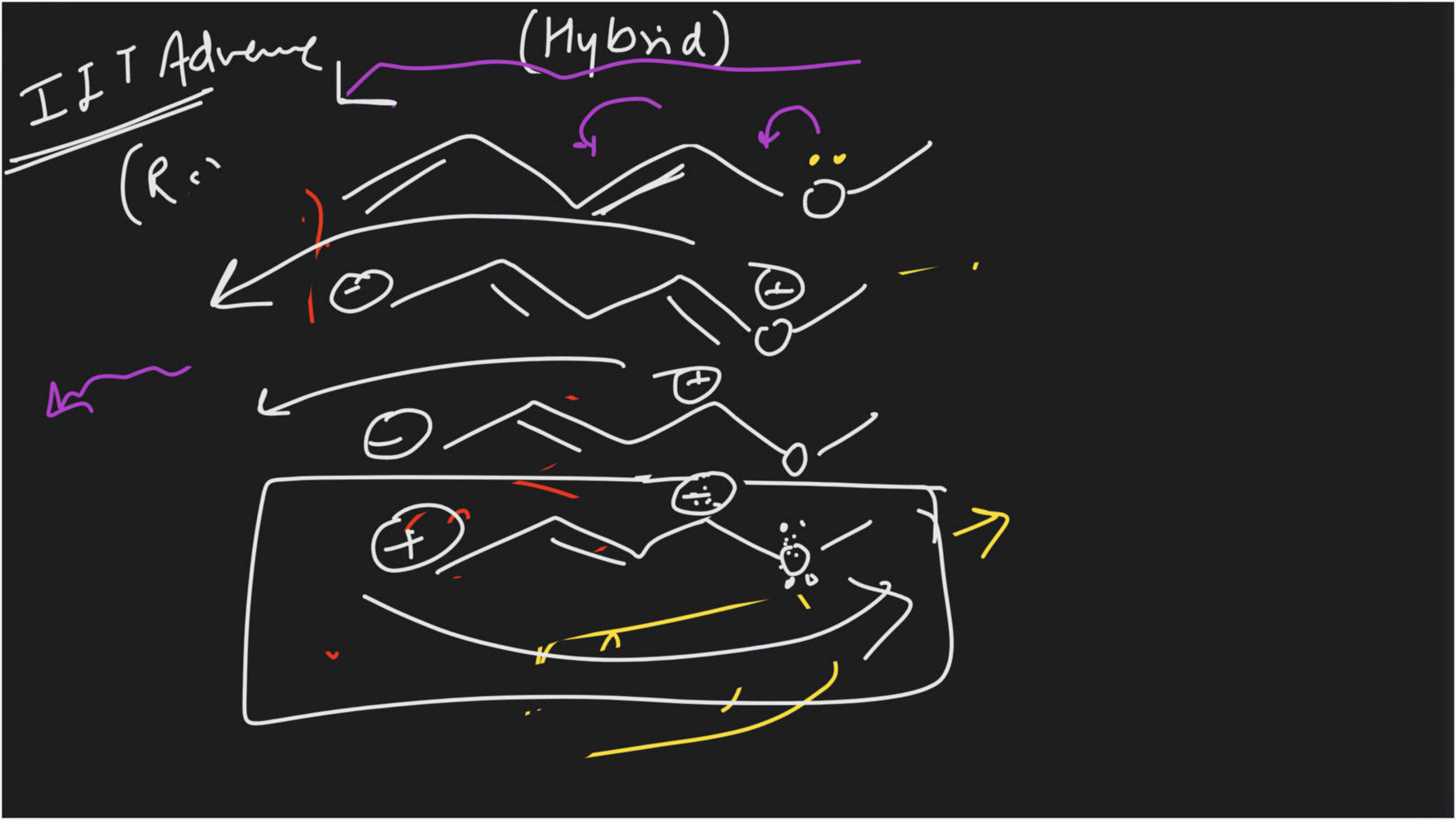
$= \sin^2\theta + (1 - \sin^2\theta)$

$= 1$

$=$ R.H.S

(1 2) $(1 > 2)$

(1 3) $(2 > 1)$


IIT Advance
(Hybrid)

Extended Conjugation

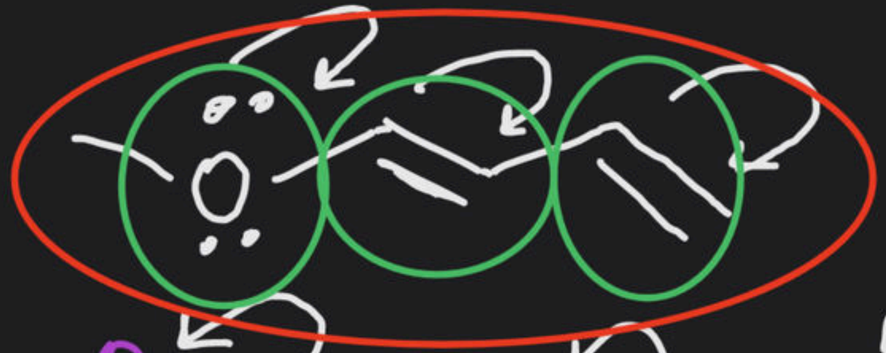
Crossed Conjugation

⇒ Compound must have 3 segments

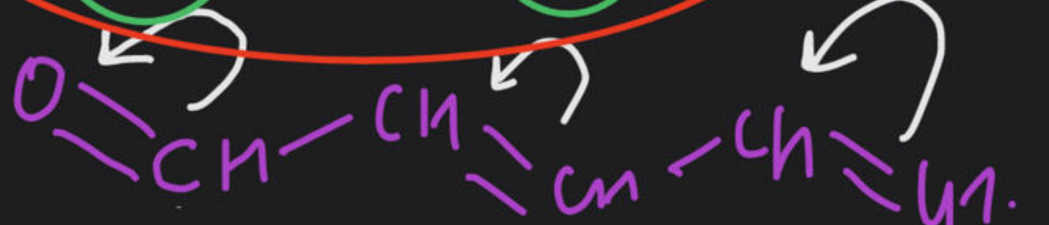
dispersion takes place in same direction

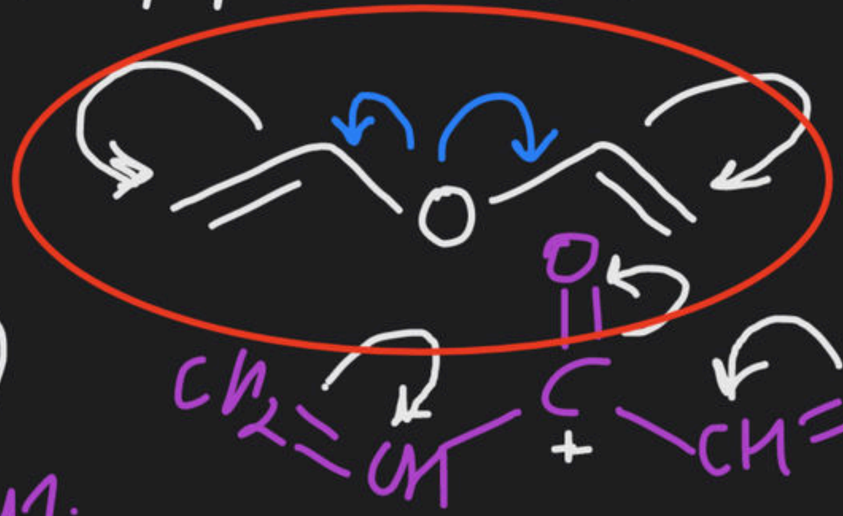
dispersion takes place in opp. direction

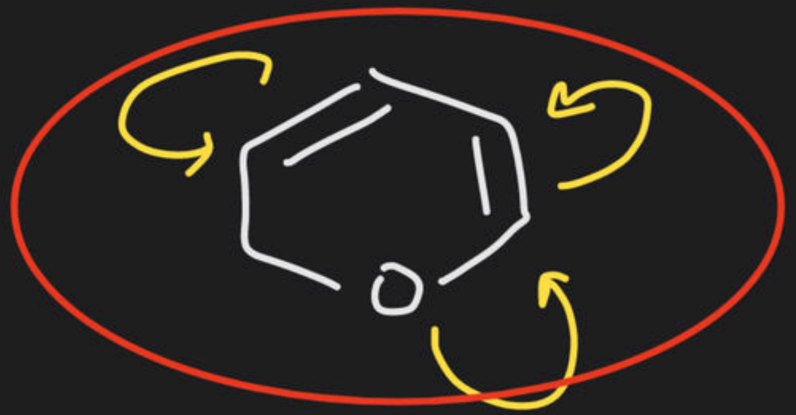
Ex-1:

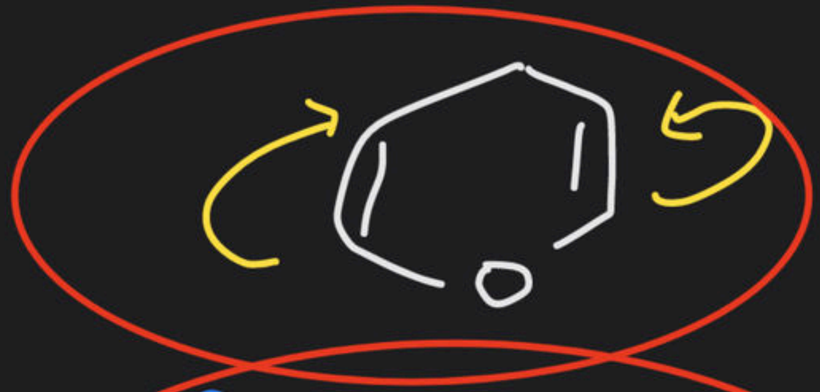


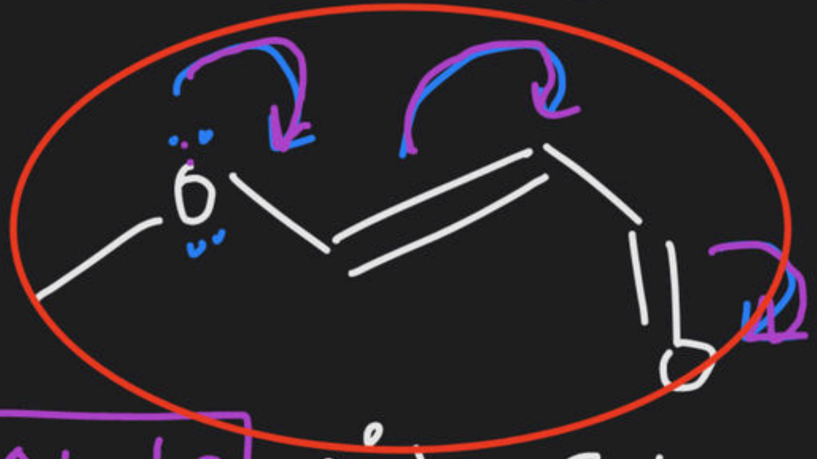
Ex-2:

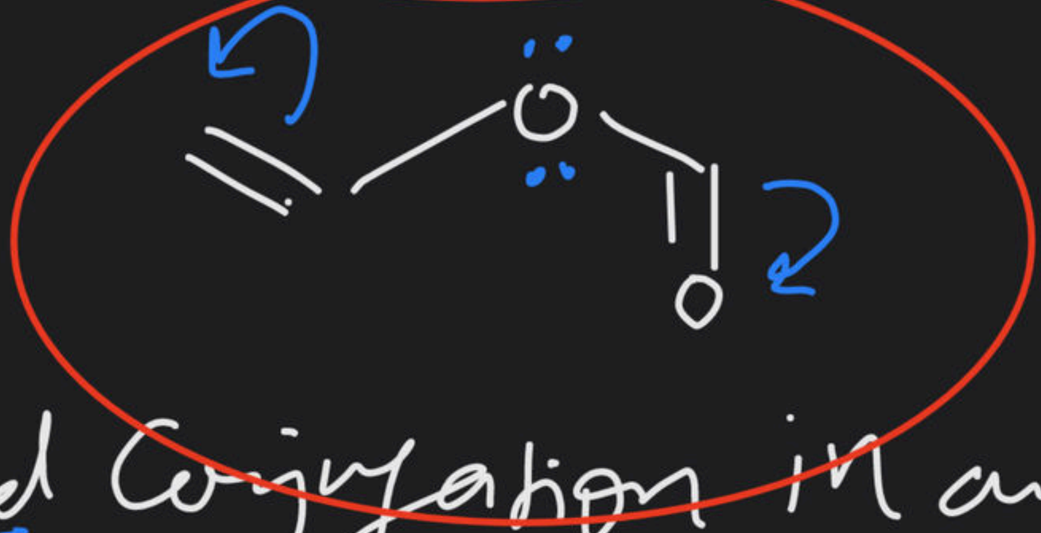








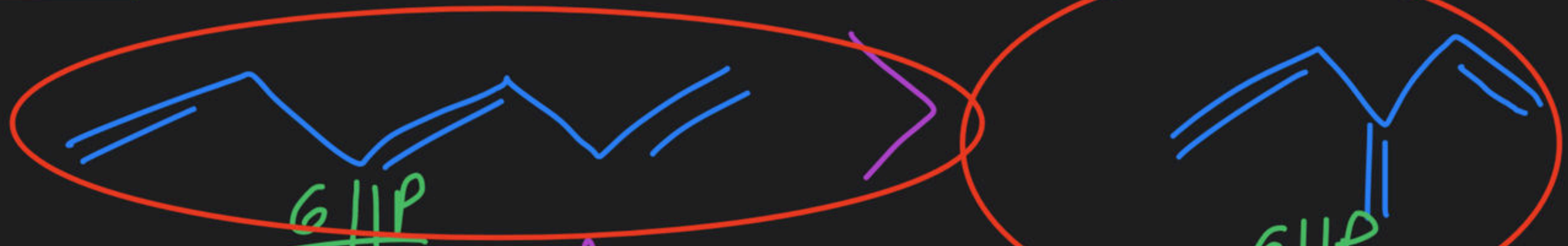




Note (i) Extended Conjugation in any compound is more stable than its analogous compound with Cross

Conjugated System.

Ex:-



6 ||P

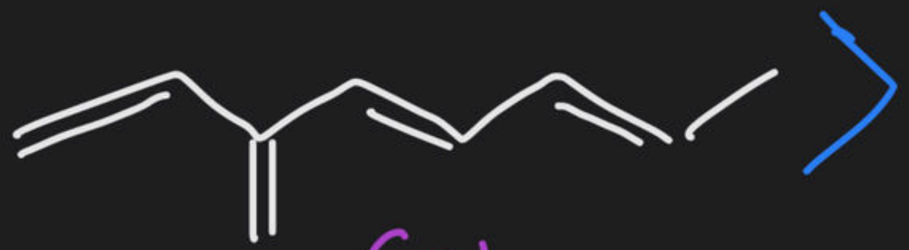
Stability order

(Extended)

6 ||P

(Cross)

Ex:-



8 ||P

(A)

overlapping

(B)

(6 ||P cyclic