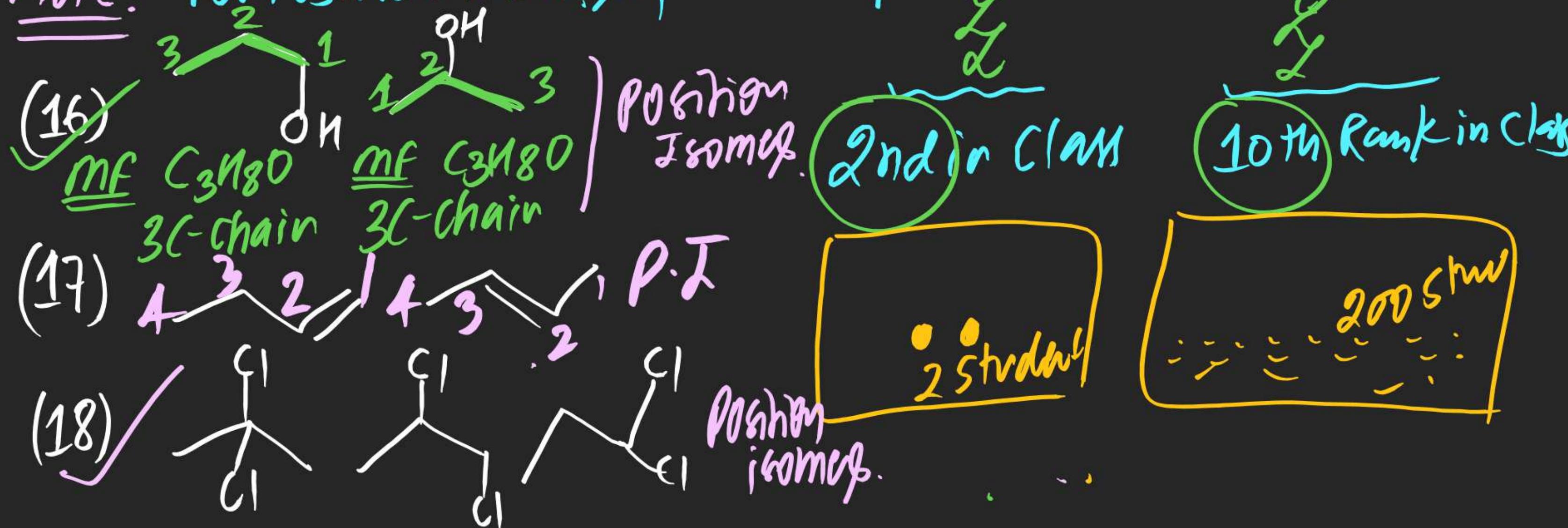
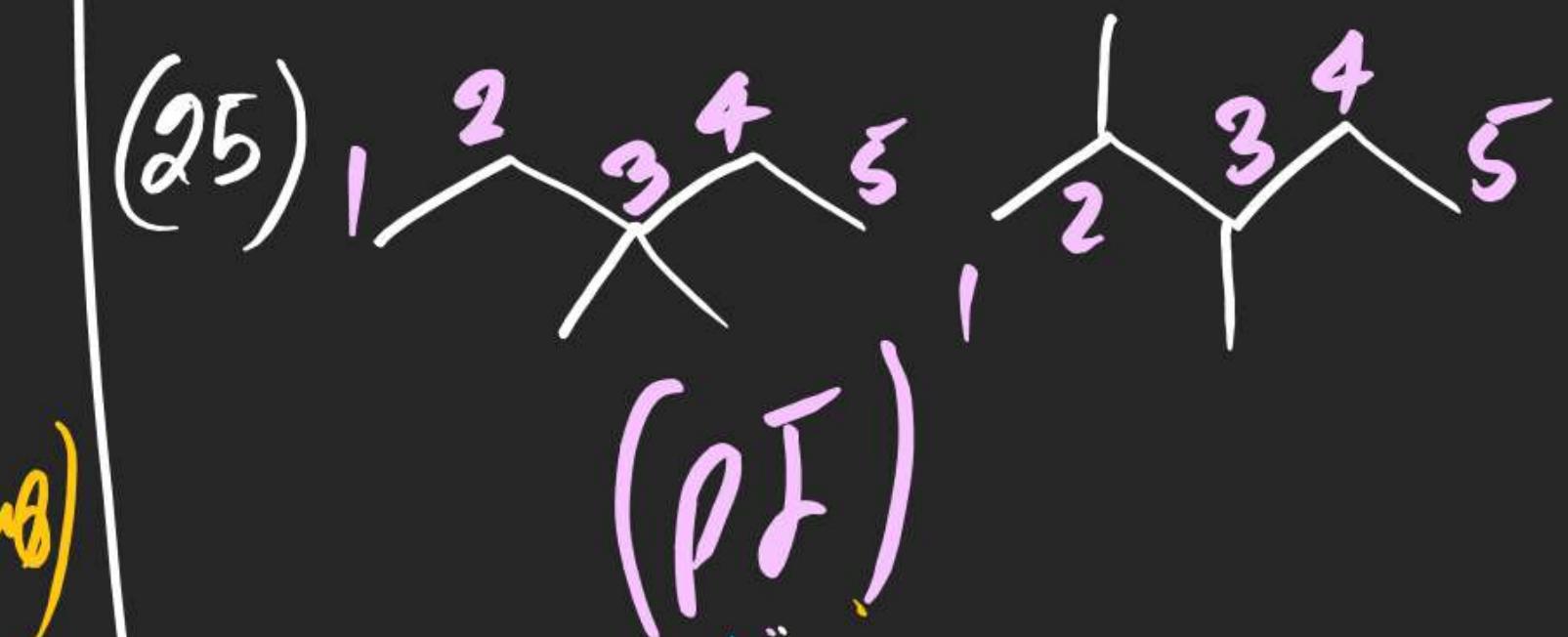
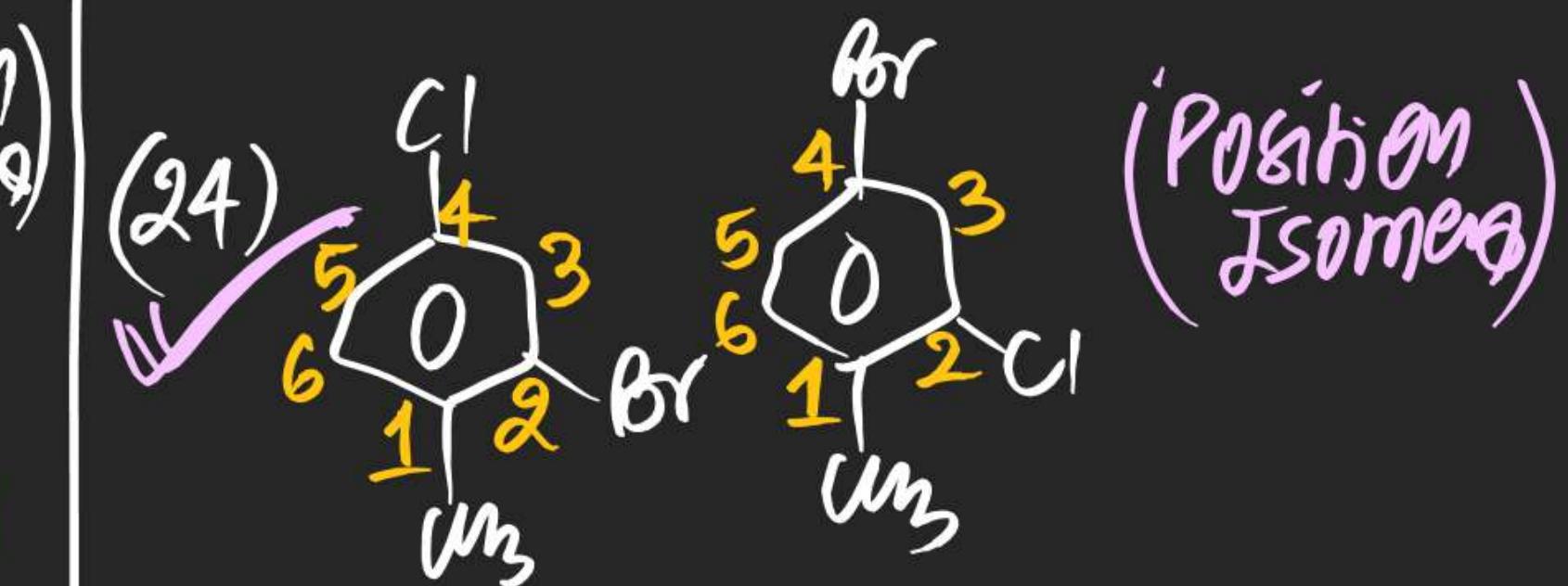
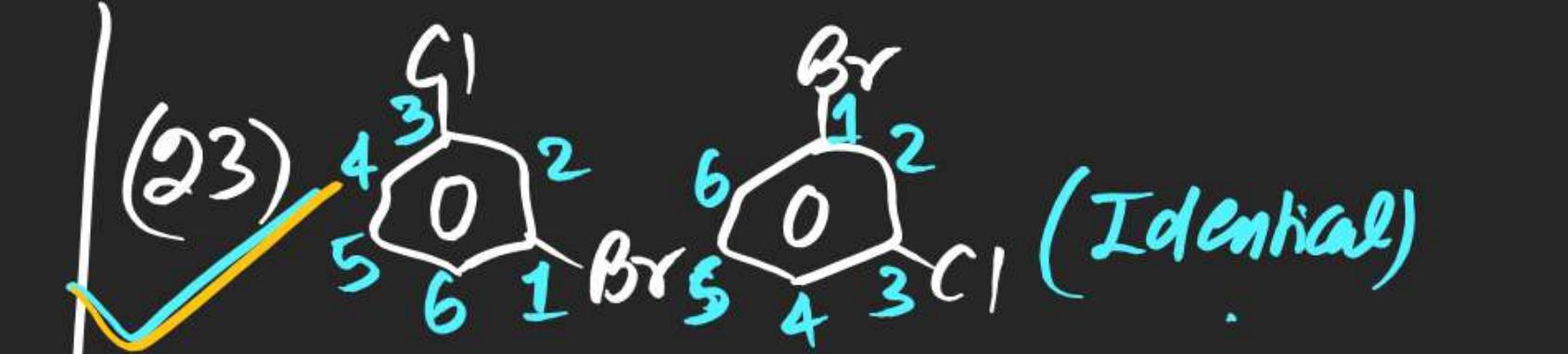
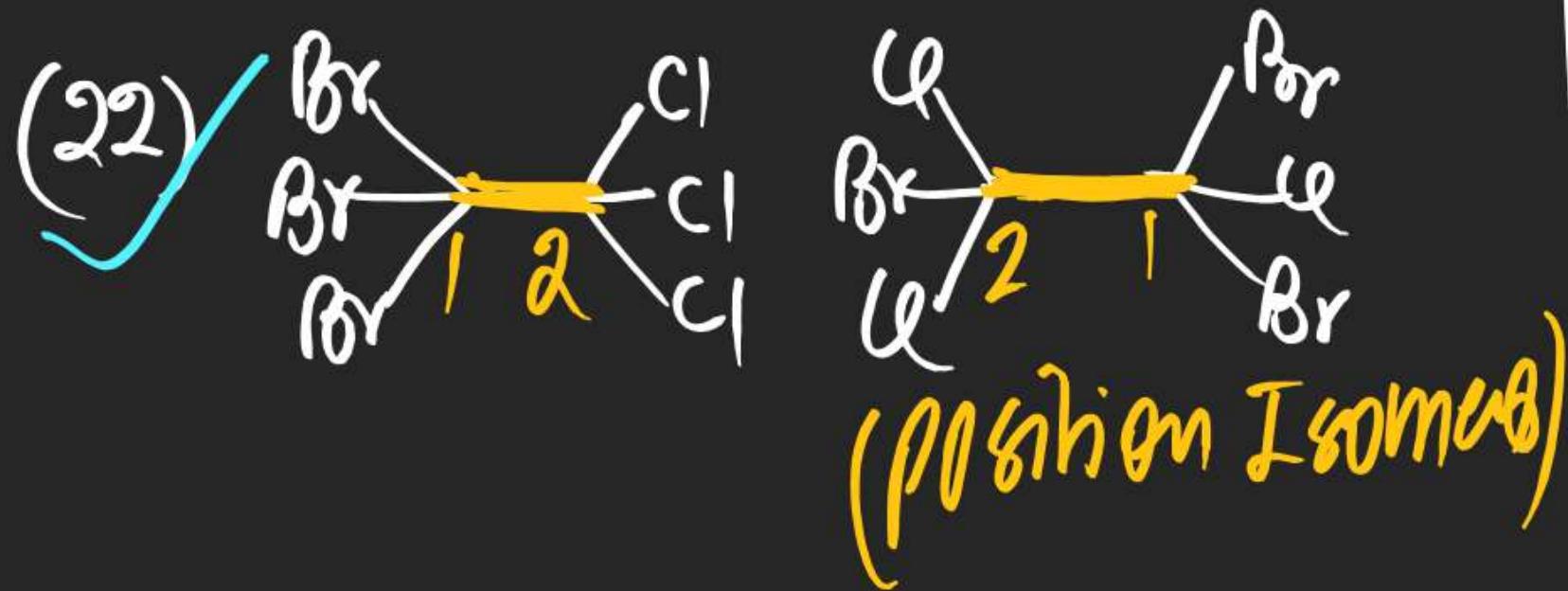
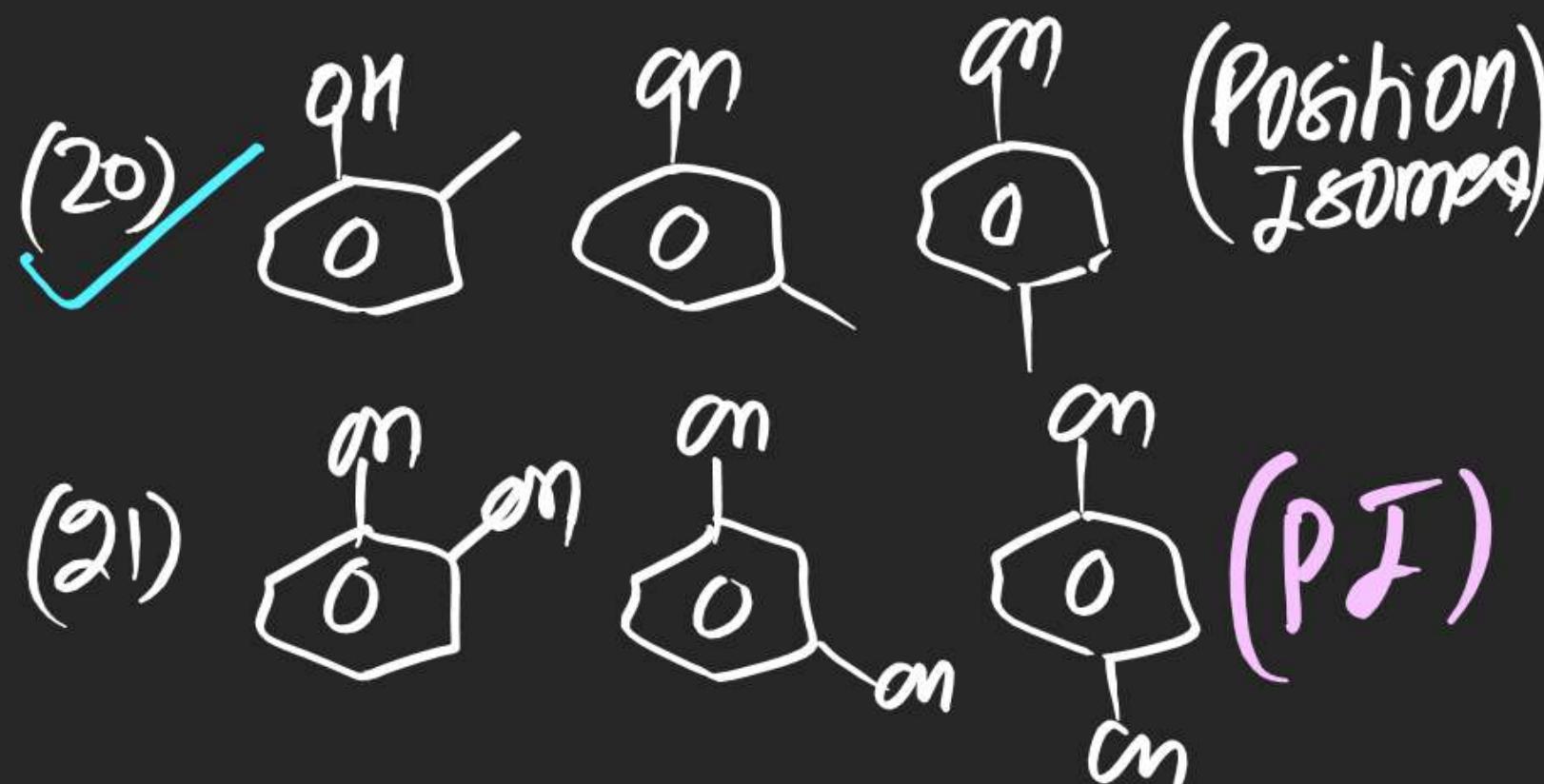
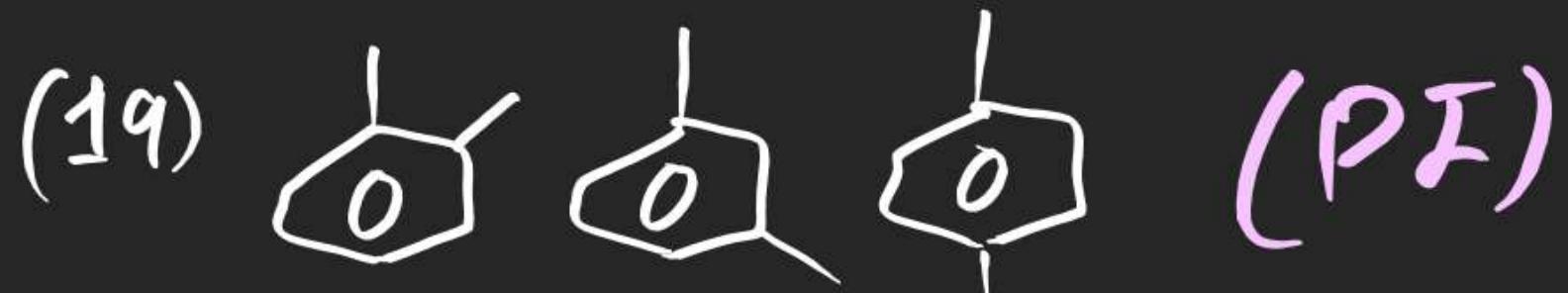


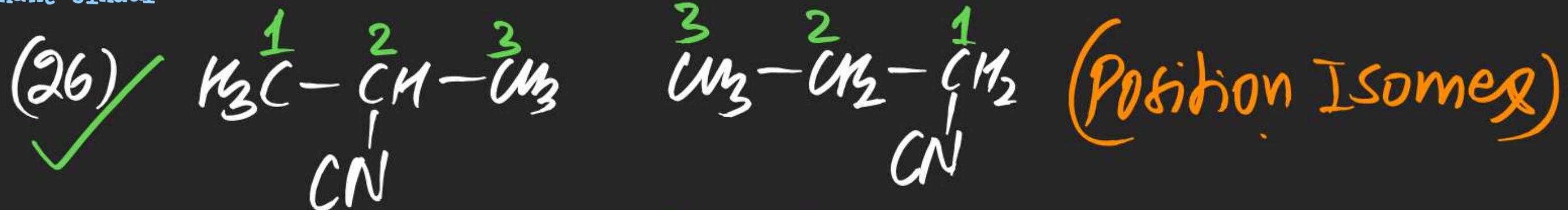
(#) Position Isomerism:

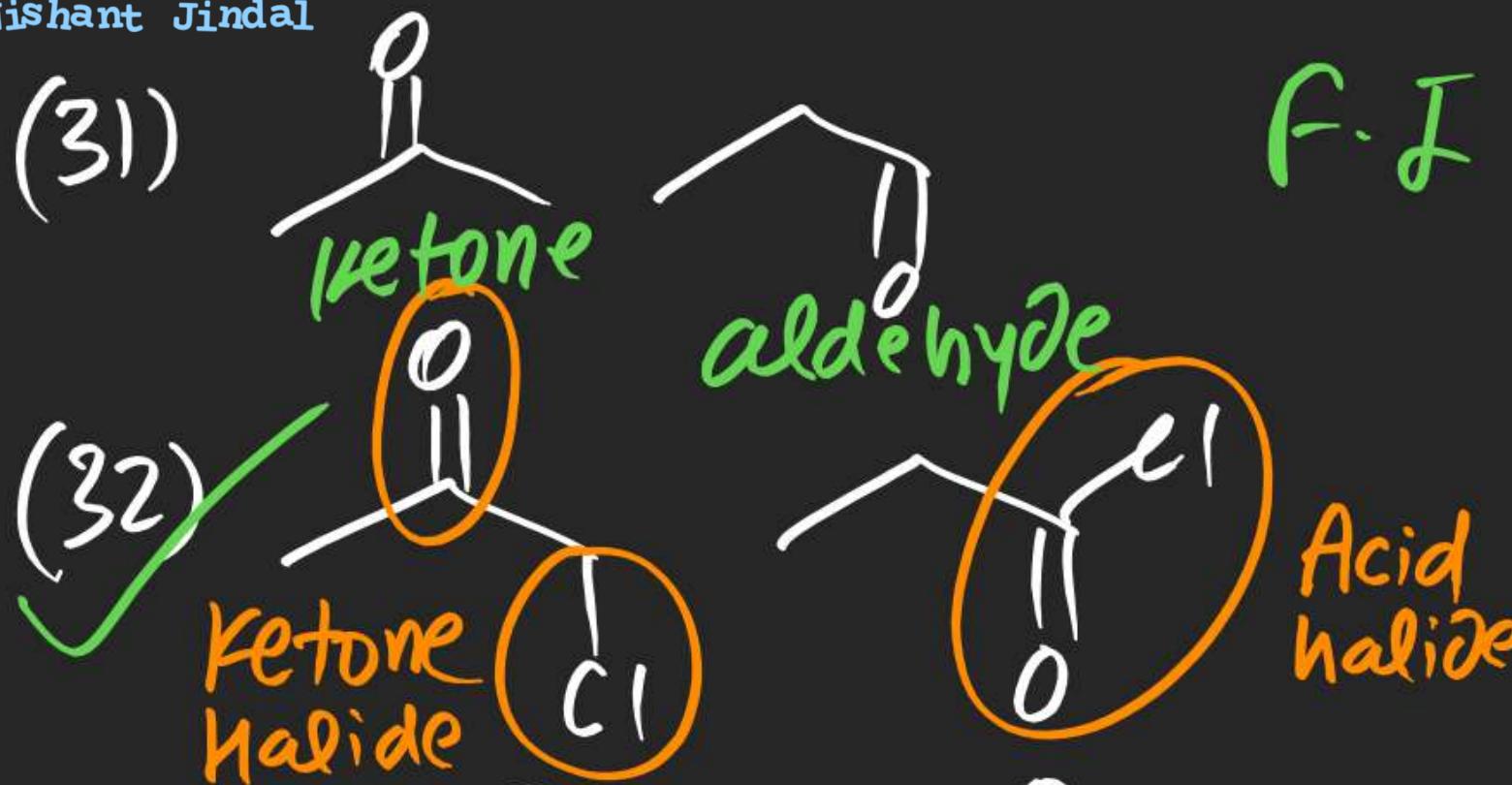
⇒ Compounds having same M.F. But different position of atoms/groups
are known as Position isomers.

Note:- For Position isomers, chain length must be same.

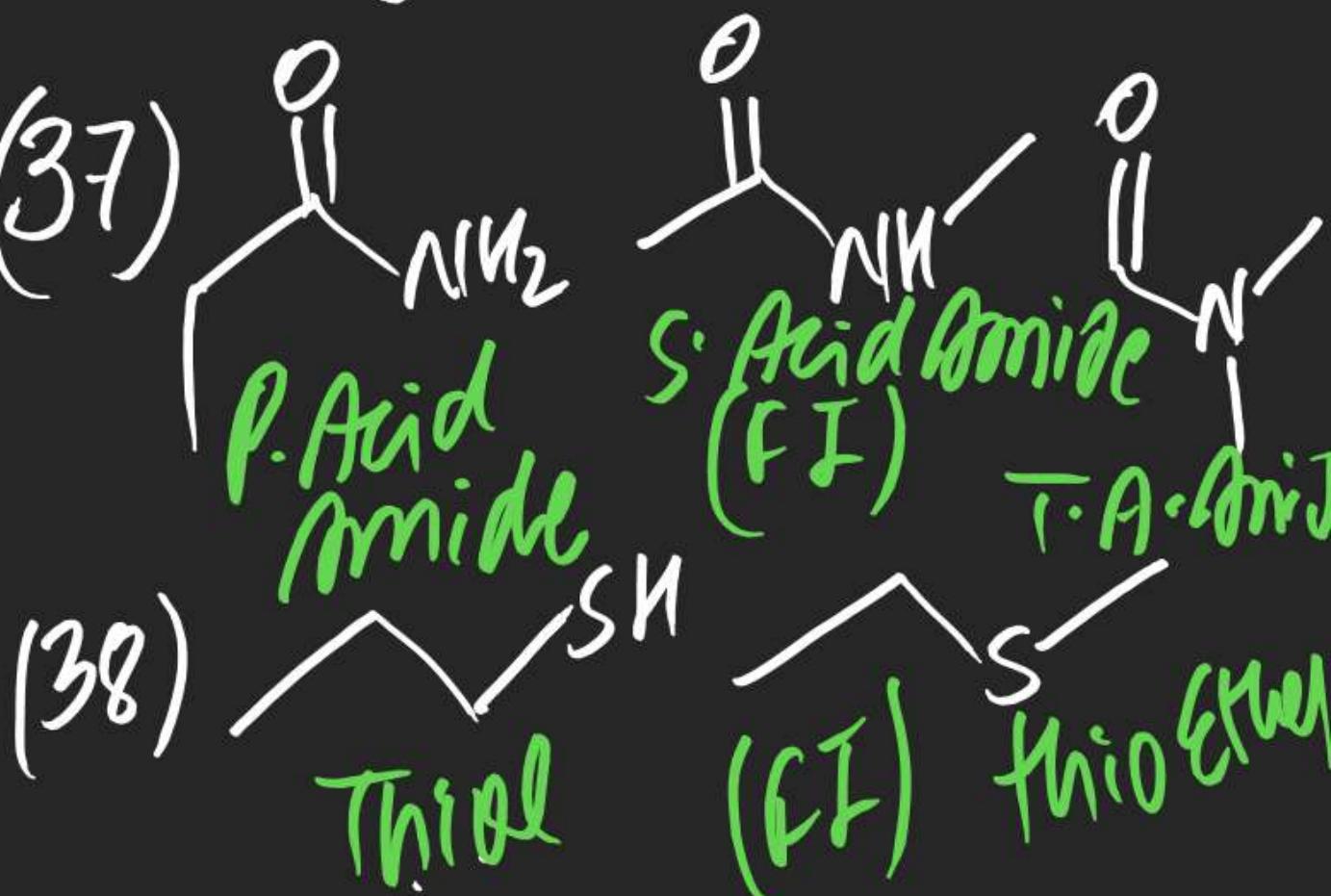
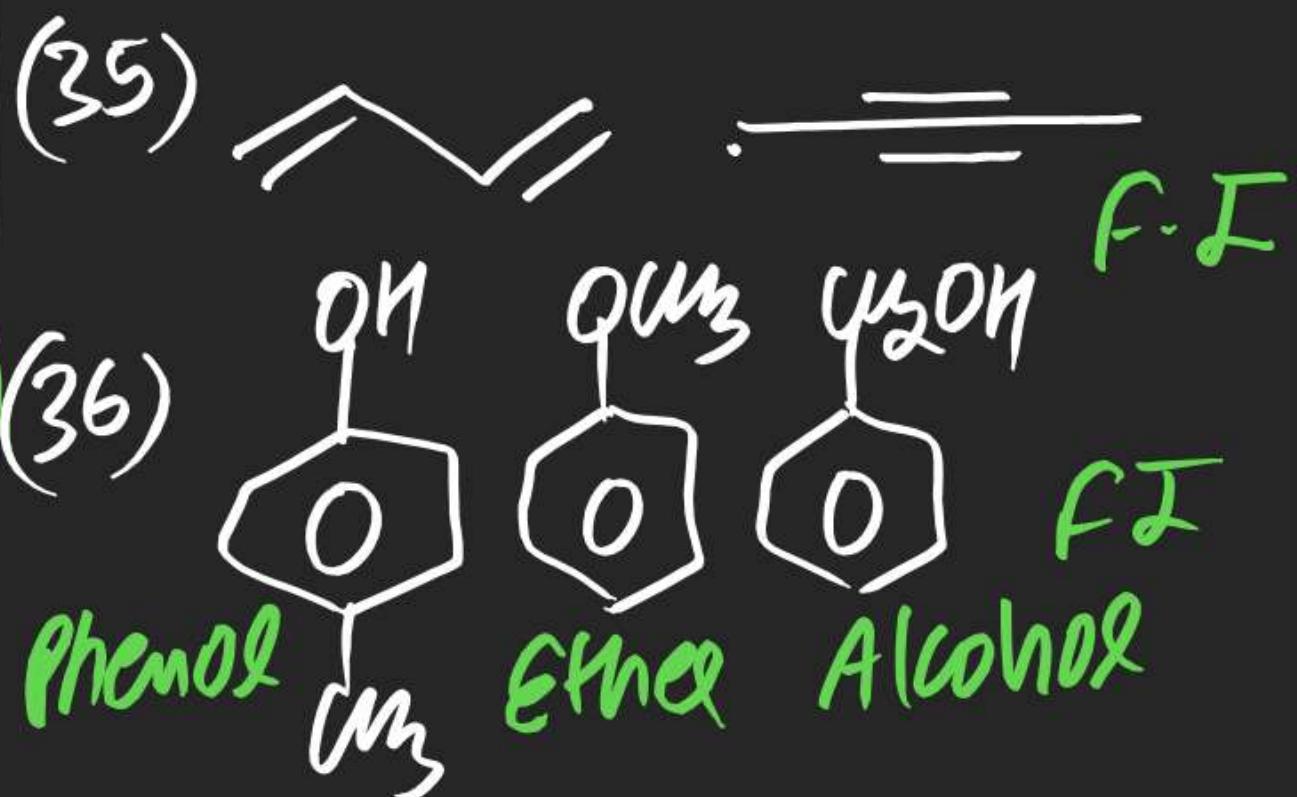


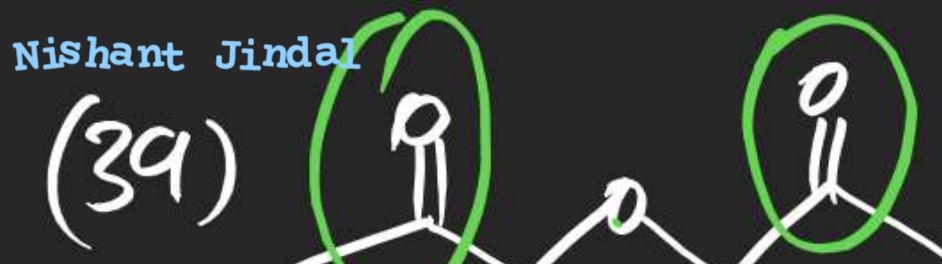






(Functional Isomers)





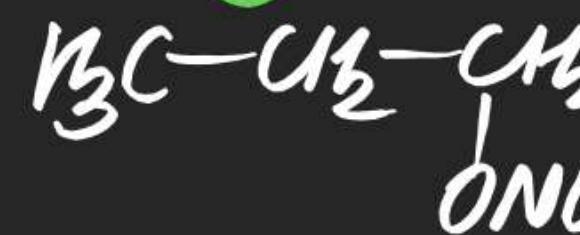
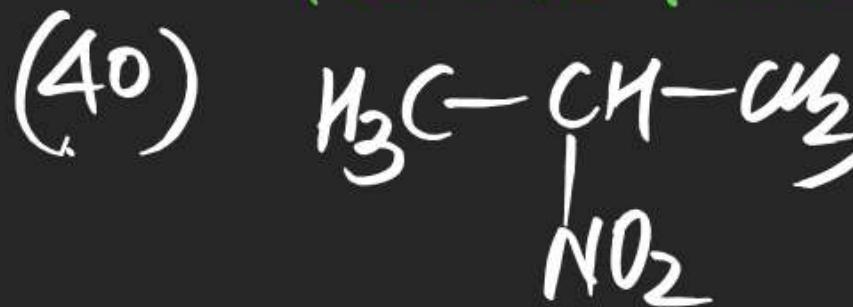
Ketone & Ether



Ester & Ketone

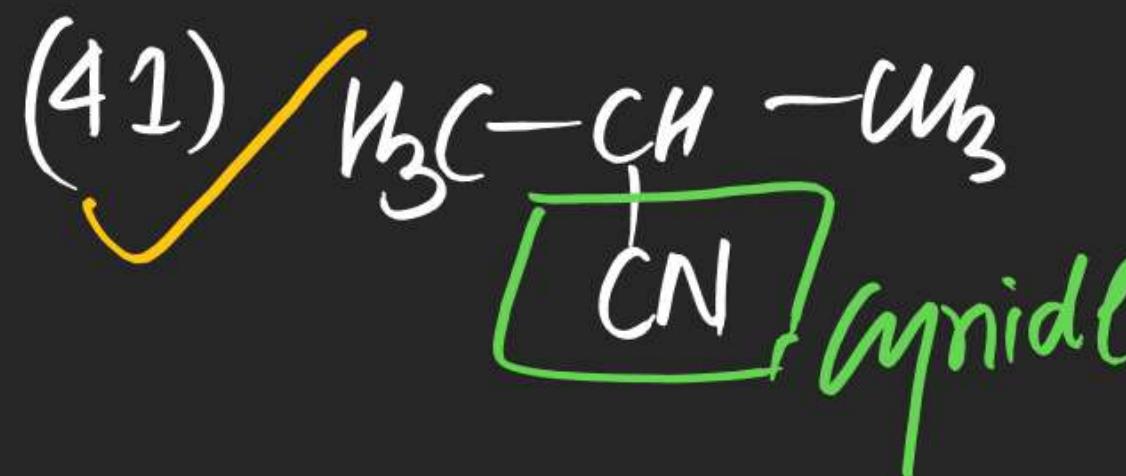


(FF))



FI

Acid anhydride



Cyanide



$\text{H}_3\text{C}-\underset{\boxed{\text{CN}}}{\text{CH}}-\text{CH}_2$

F· Isomers

isocyanide

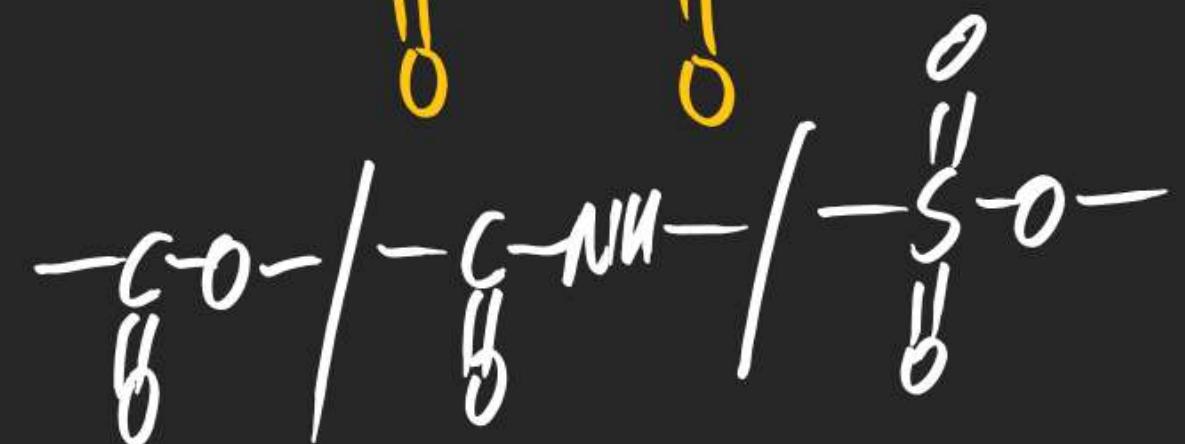
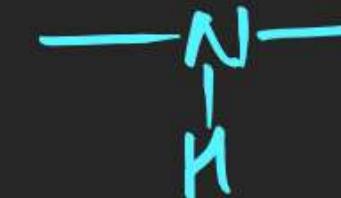


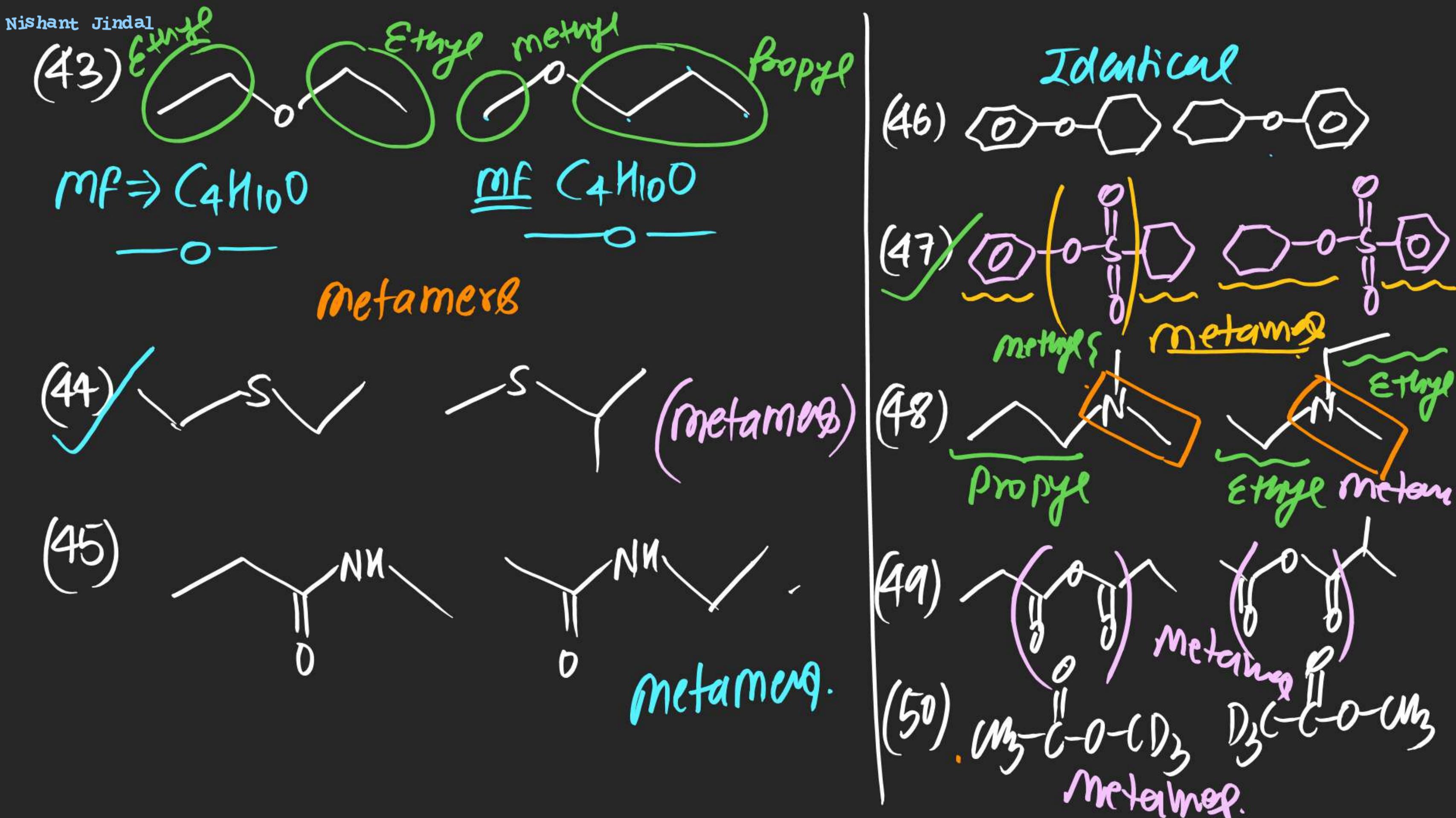
Alcohol . FI

Aldehyde

(II) metamerism:

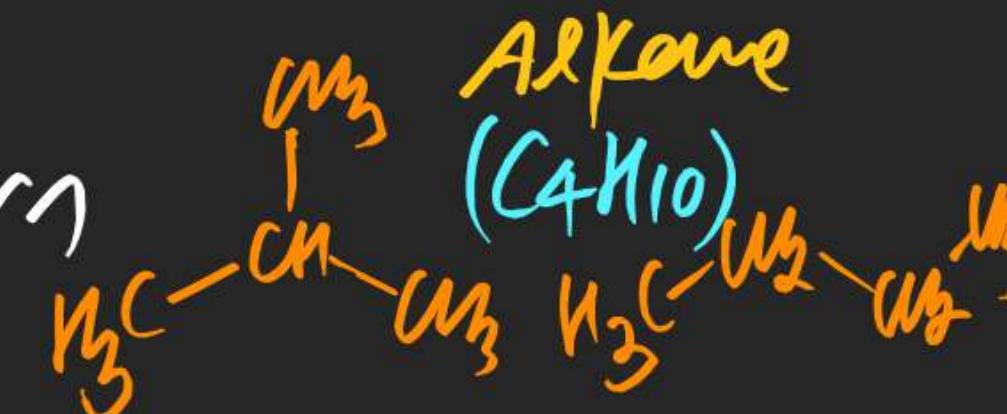
Compounds having same MF But difference in alky groups w.r.t. to Bivalent functional groups.

monovalent

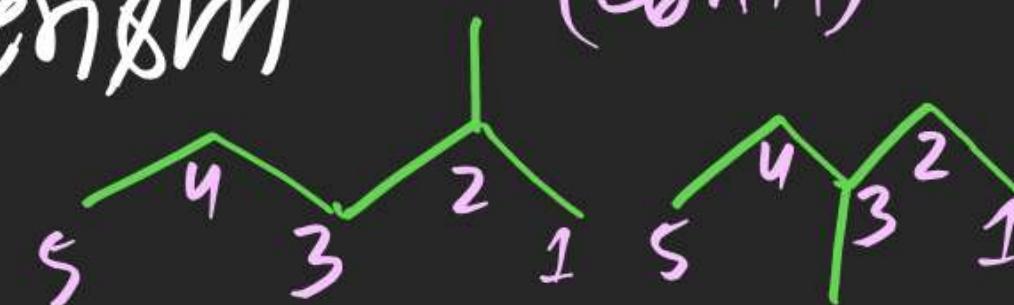


(51) Draw Hydrocarbon with least mol wt which can show:

(a) Chain isomerism

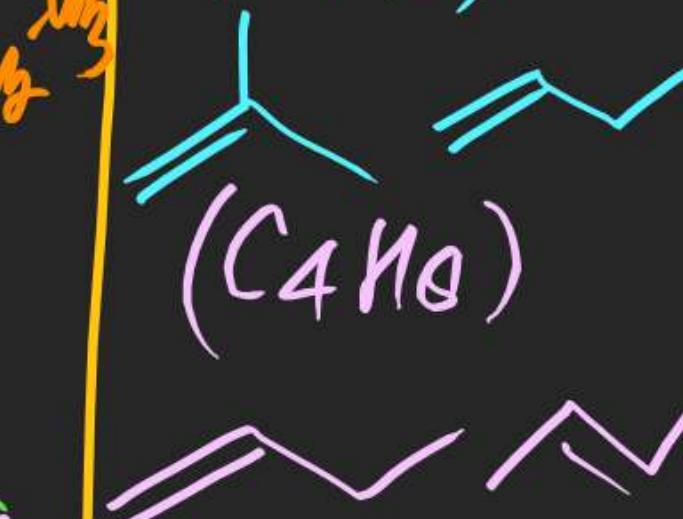


(c) Position isomerism



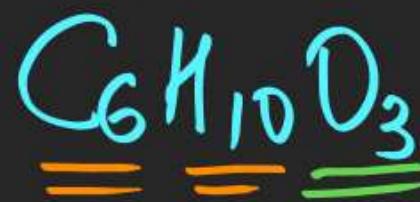
(b) Ring chain isomerism

X



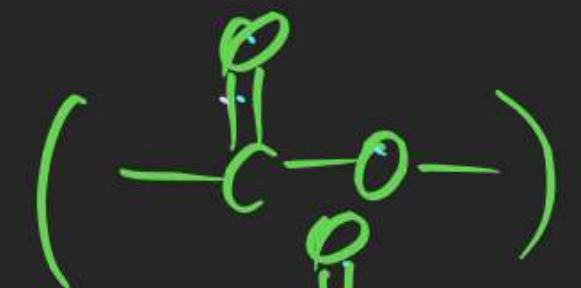
Tautomerism: Such kind of Isomerism arises due to oscillation of monovalent atom.

⇒ Frankland



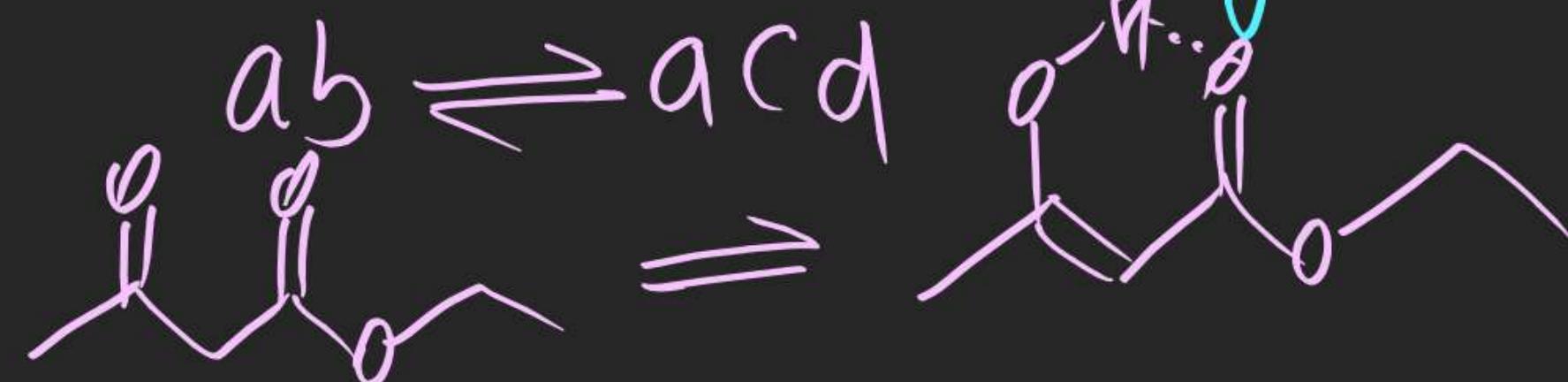
- ⇒ Intracorrelable
- ⇒ dynamic equilibrium
- ⇒ Can't be separated at Room Temp.
- ⇒ Tautomers.

Ex: A organic compound having MF $C_6H_{10}O_3$ (D.O.V=2)
give following observation.

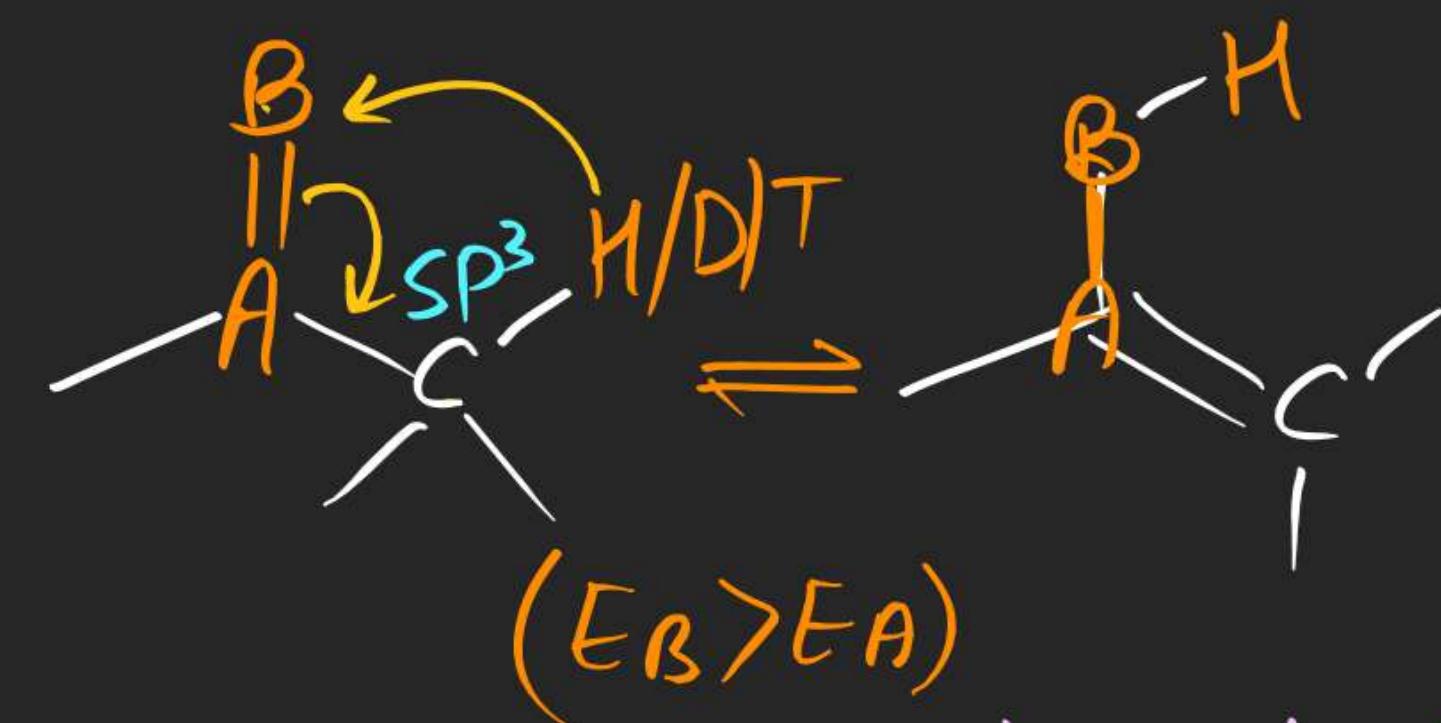
- (a) (+) re Test fa ester (
- (b) (+) ————— Ketone (
- (c) ————— Alcohol (
- (d) ————— unsaturation (alkene) (

Comment on hap. of Organic composition.

Soln:

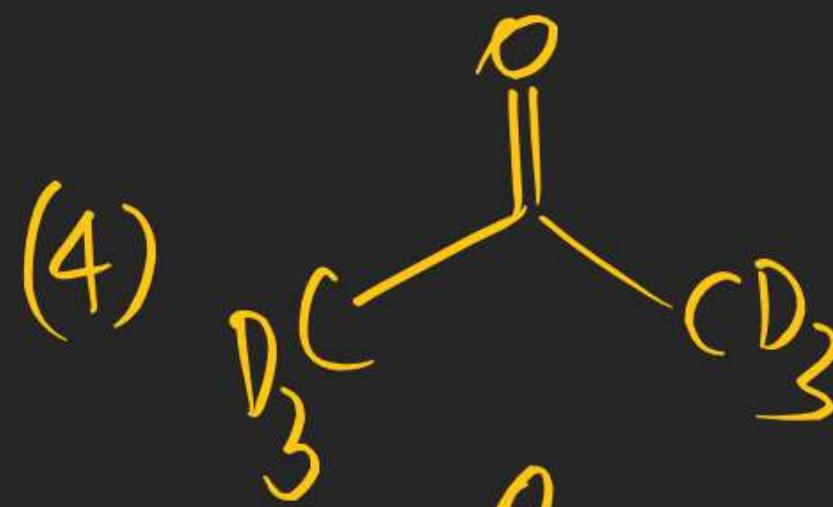
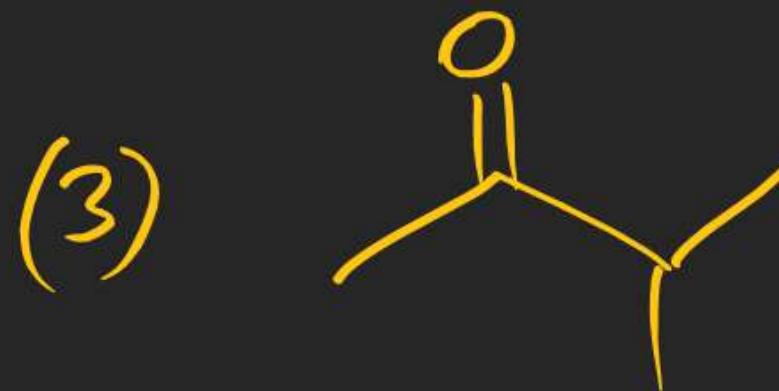


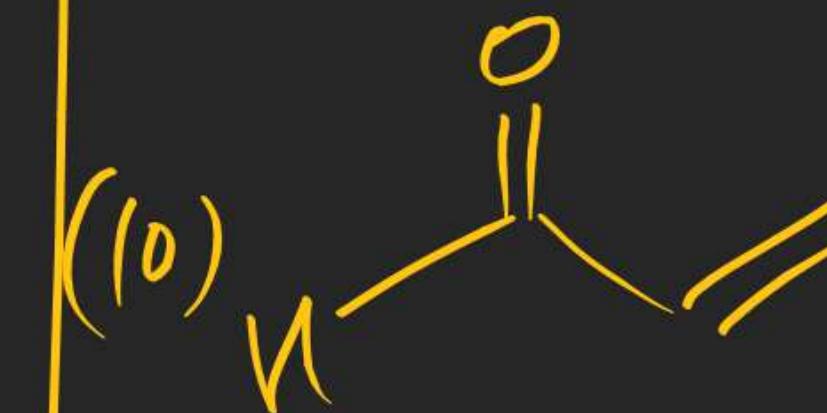
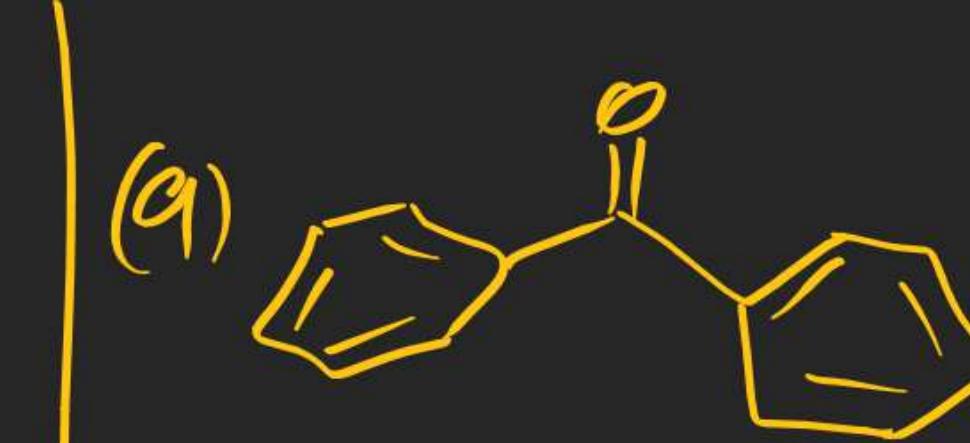
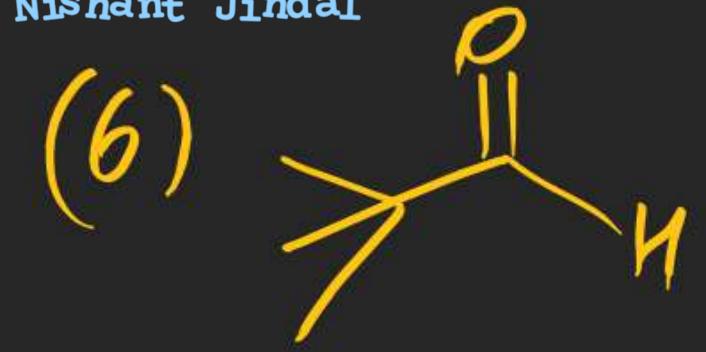
(#) Condition of Tautomerism:

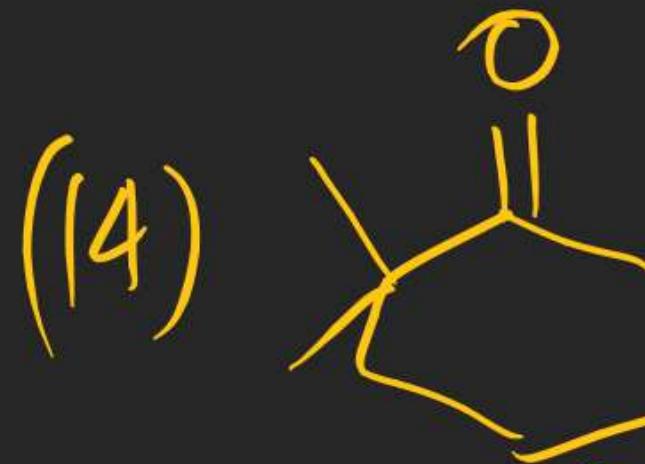
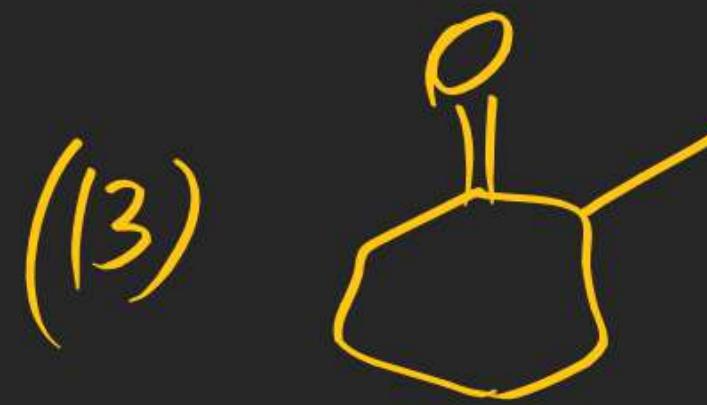
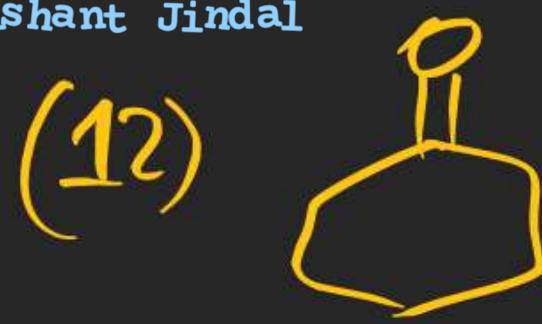


Ex: Identify compounds which can show tautomerism.
& also draw its First two Stable tautomers.





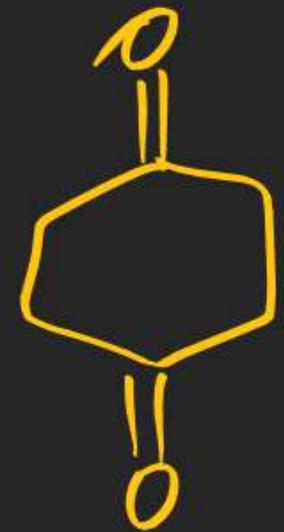




(16)

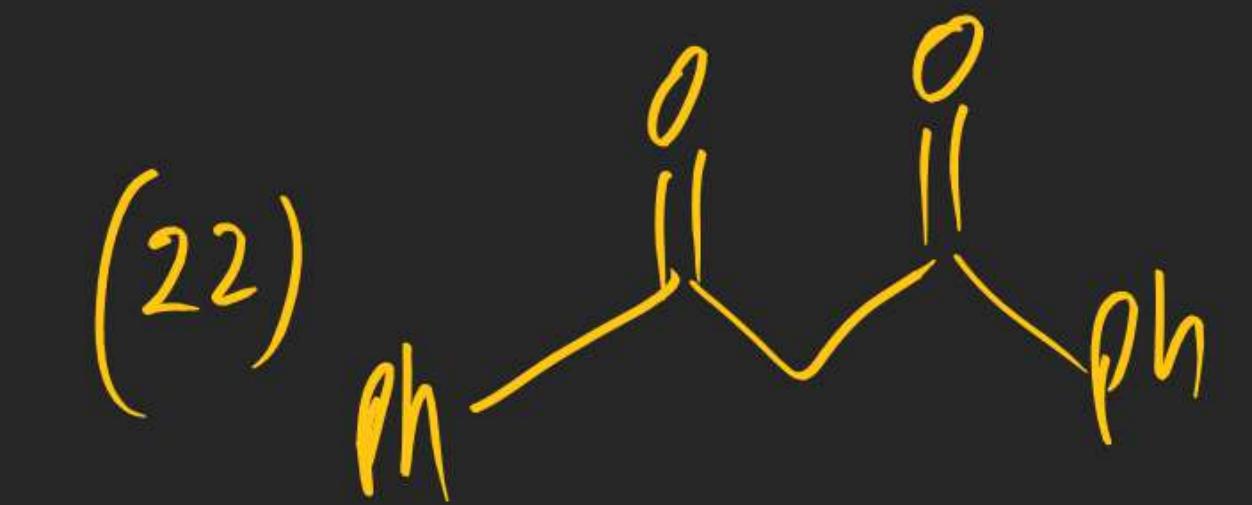
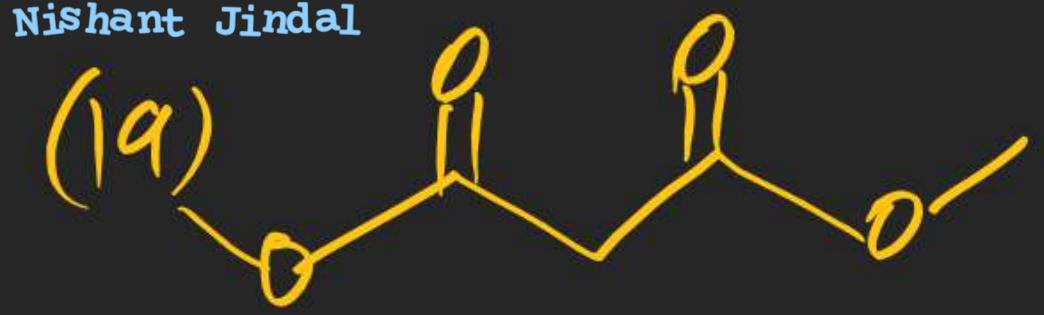


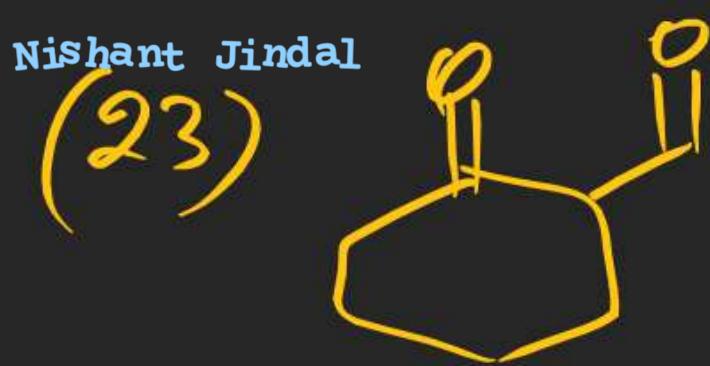
(17)

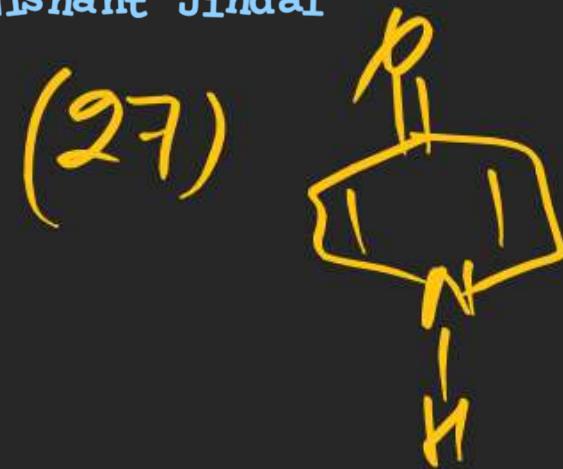


(18)



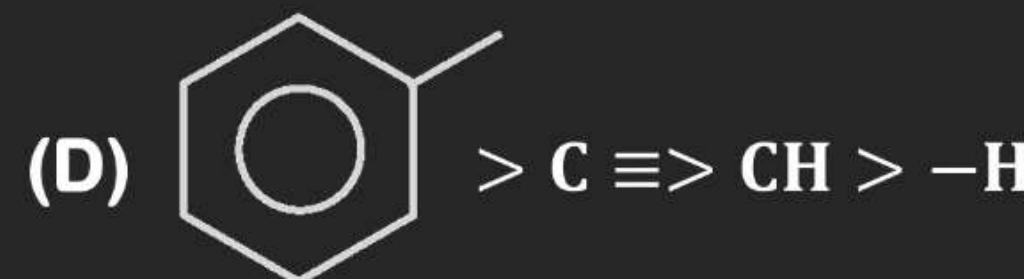






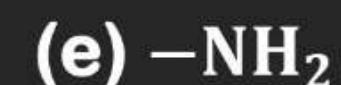
General Organic Chemistry**EXERCISE – I**

Q.1 Which of the following is false order of- I effect?

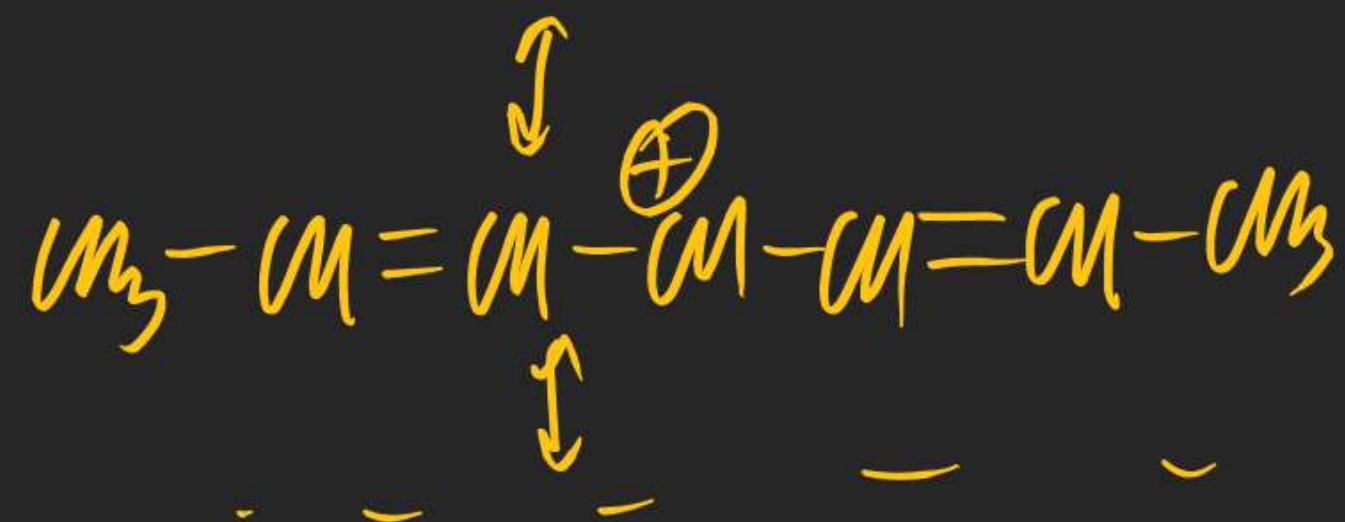
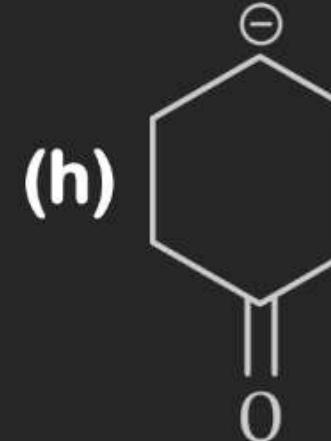
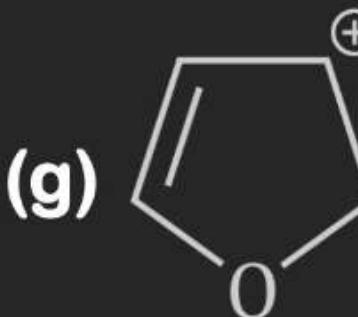
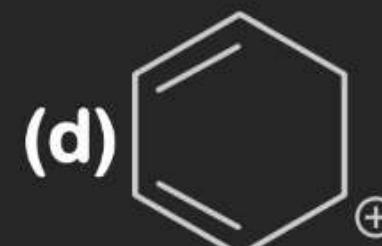
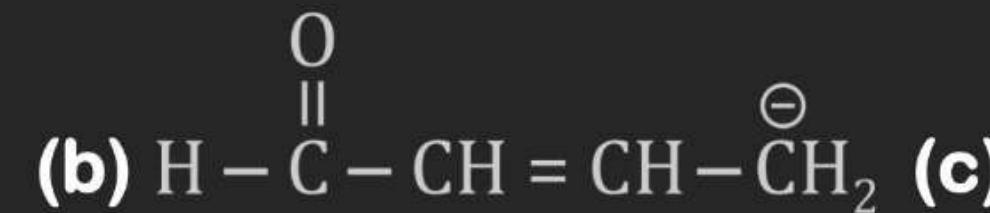
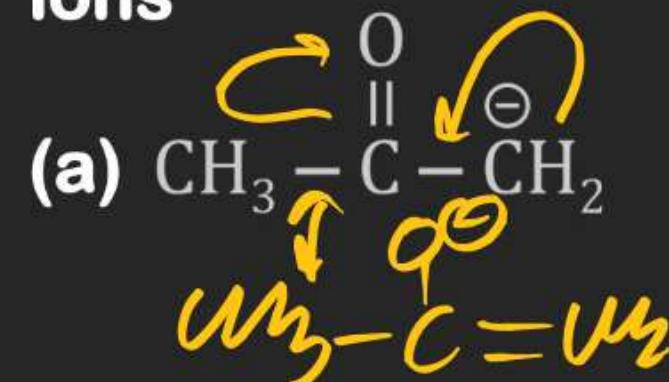


GX-2 GOC sheet
BB G (1-25)
GOC

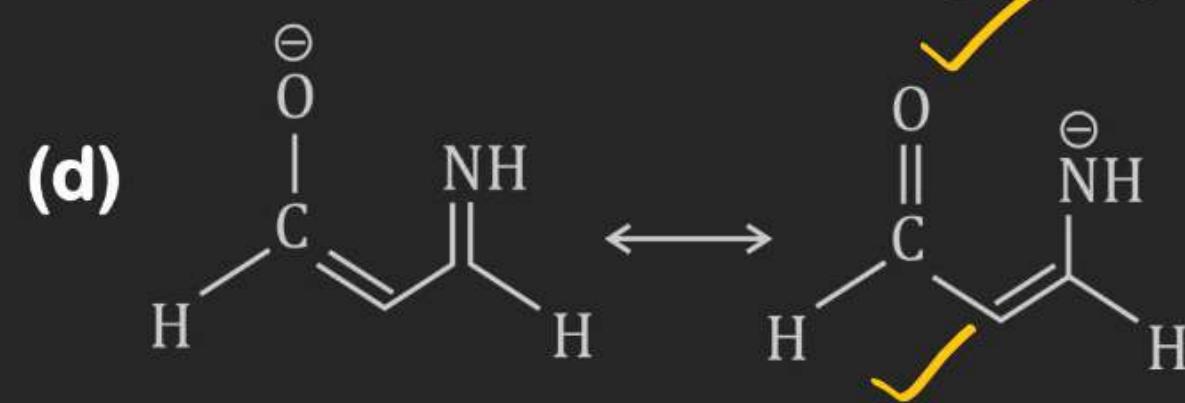
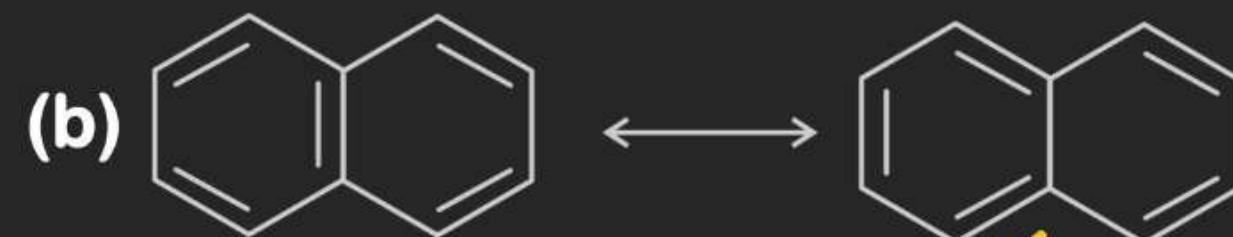
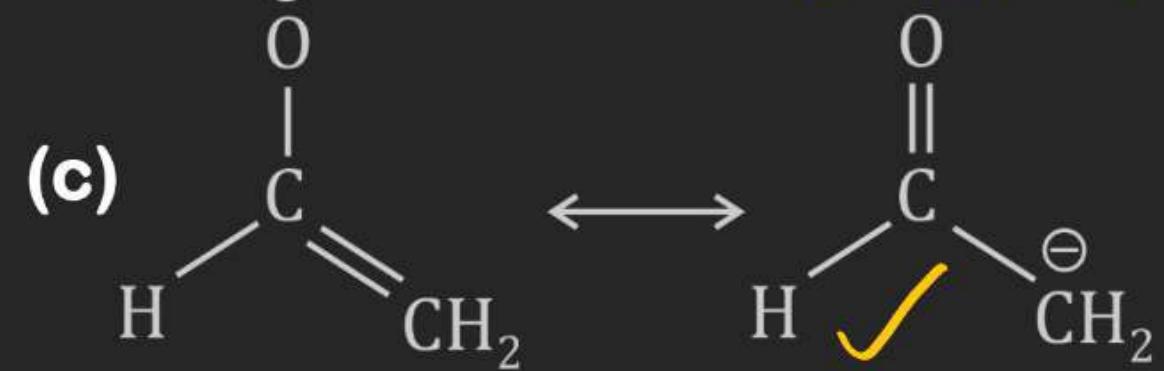
Q.17 Which of the following groups can either donate or withdraw a pair of electrons in resonance depending upon situation:



Q.18 Draw the resonance forms to show the delocalization of charges in the following ions



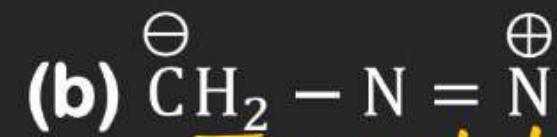
Q.19 Identify less stable canonical structure in each of the following pairs:



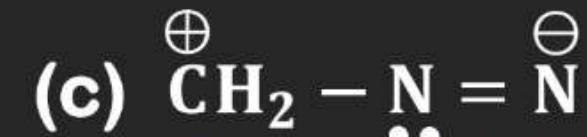
Q.22 Arrange the following resonating structure according to their contribution towards resonance hybrid?



Ans
 (A) $a > d > c > b$
 (C) $a > c > b > d$

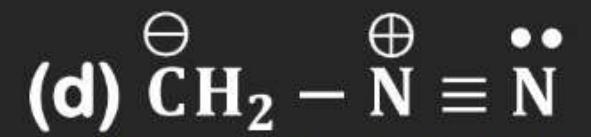


In octet
 X (B) $b > a > c > d$



In octet

(D) $d > a > b > c$

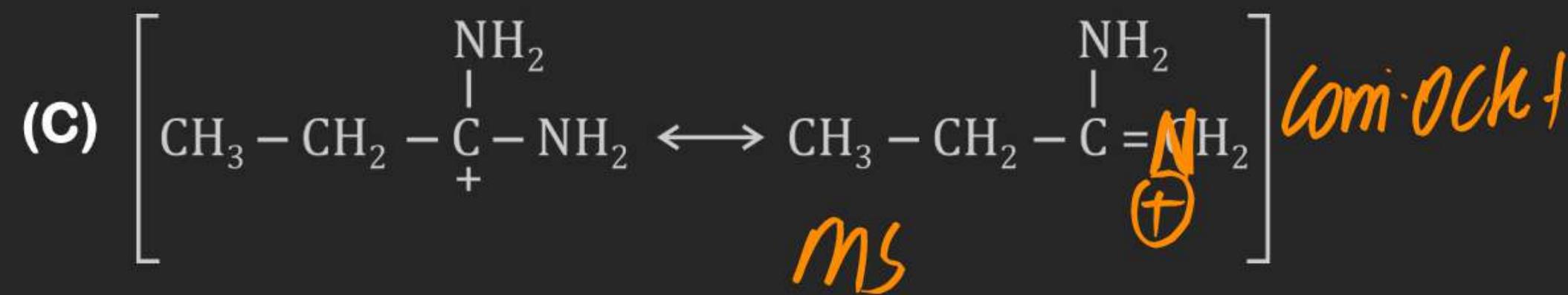
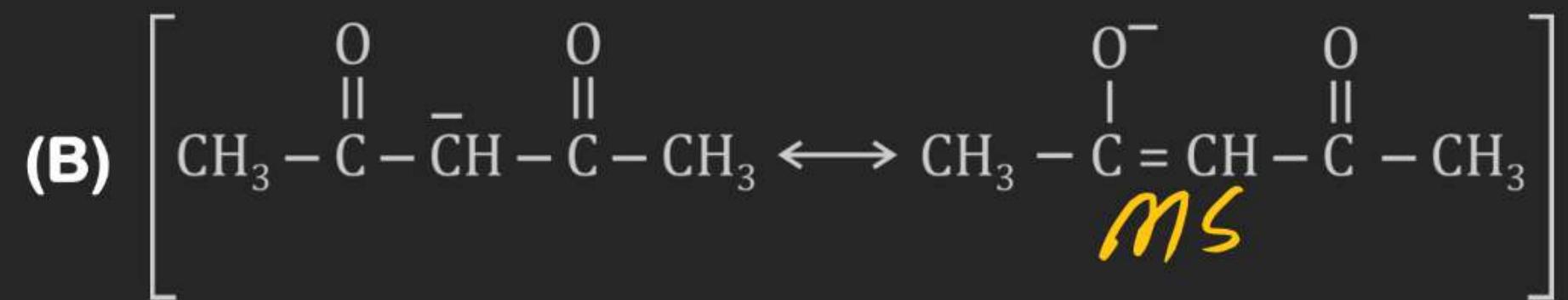


Comp. octet

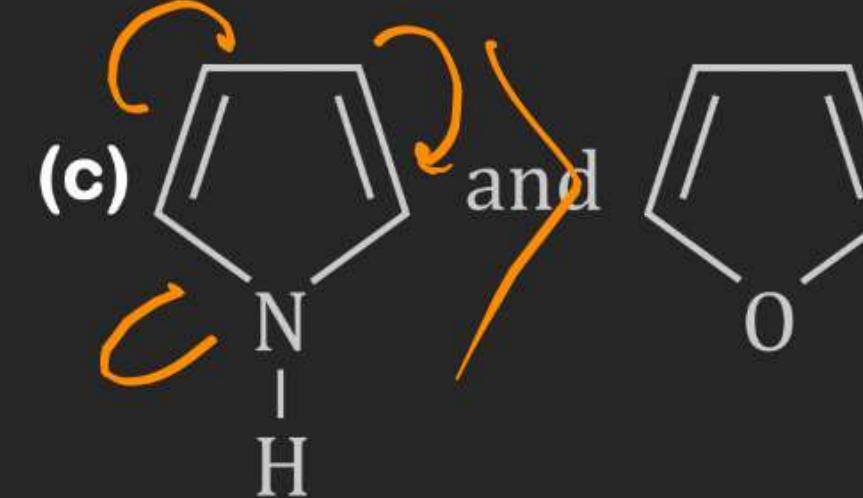
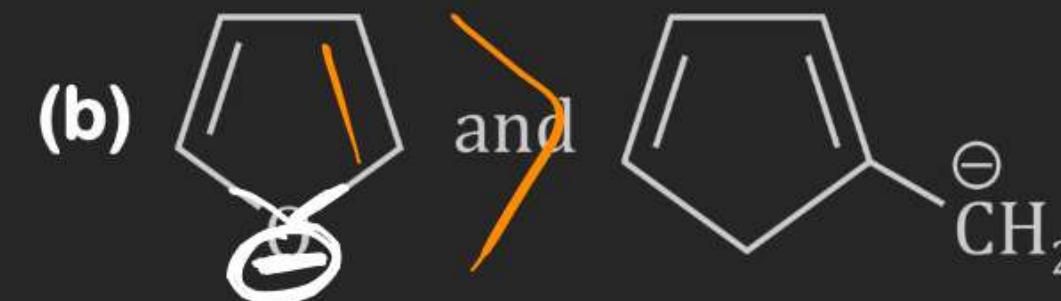
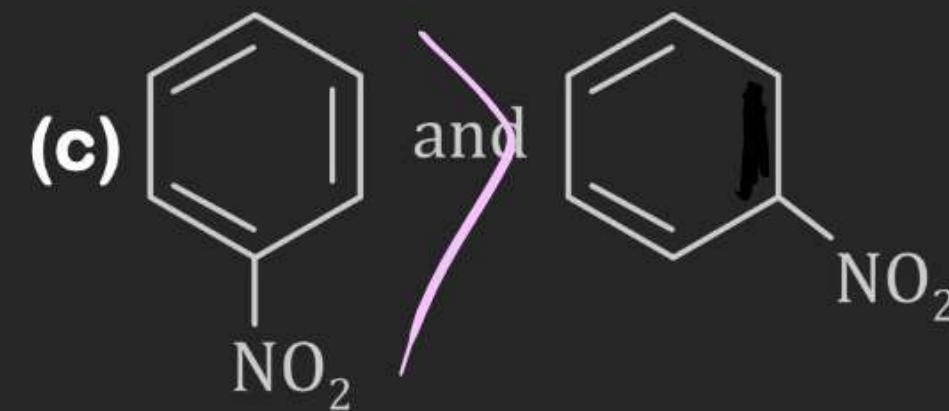
6e δ

6e δ

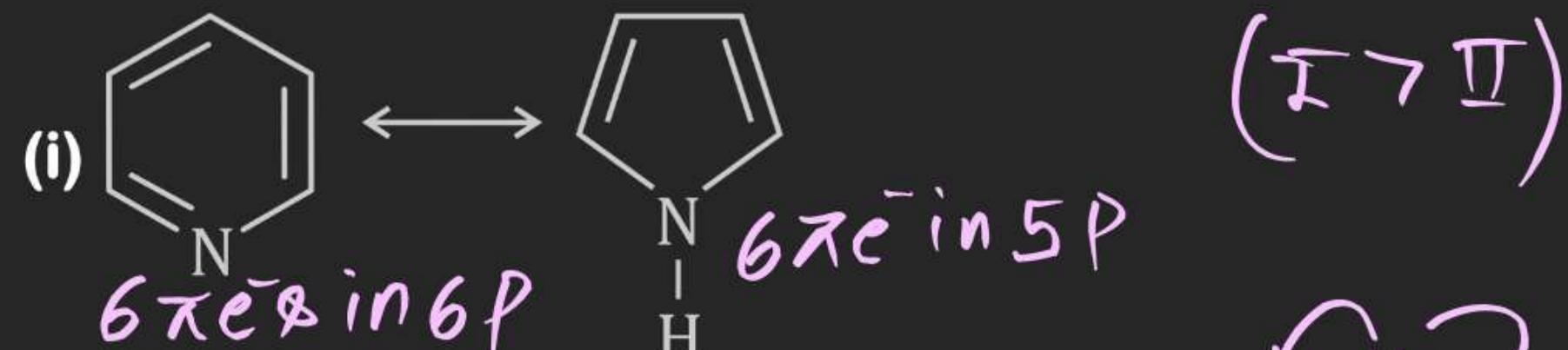
Q.23 In each of the following pairs of resonating structure which resonating structure is more stable:

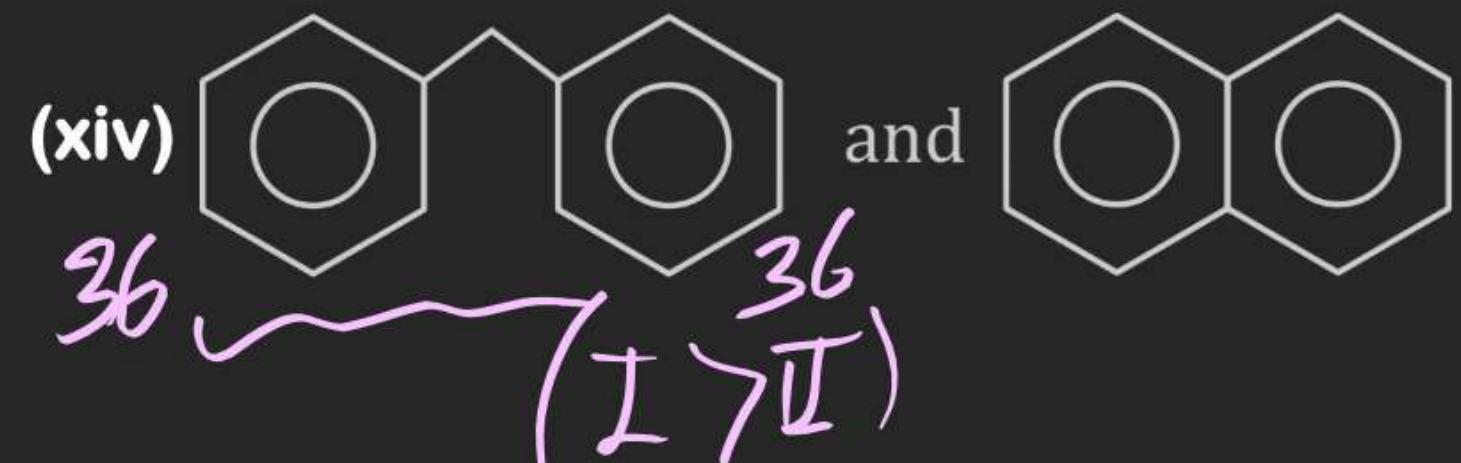
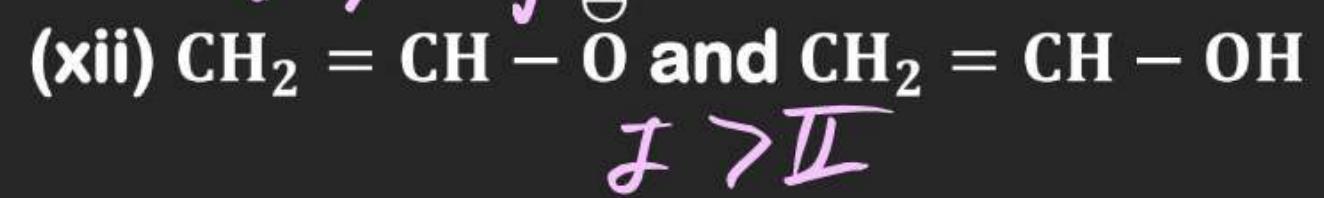
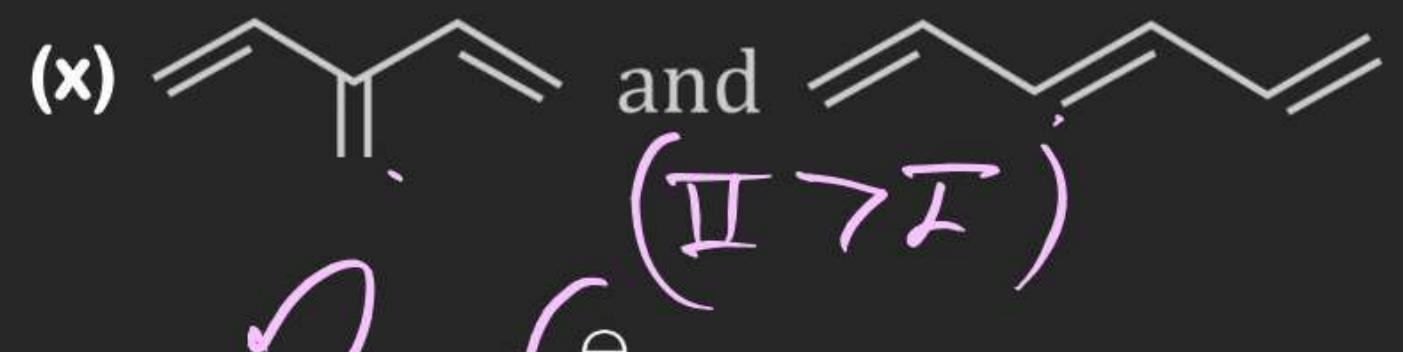


Q.25 In the given pair of compounds select the one in each pair having lesser resonance energy :

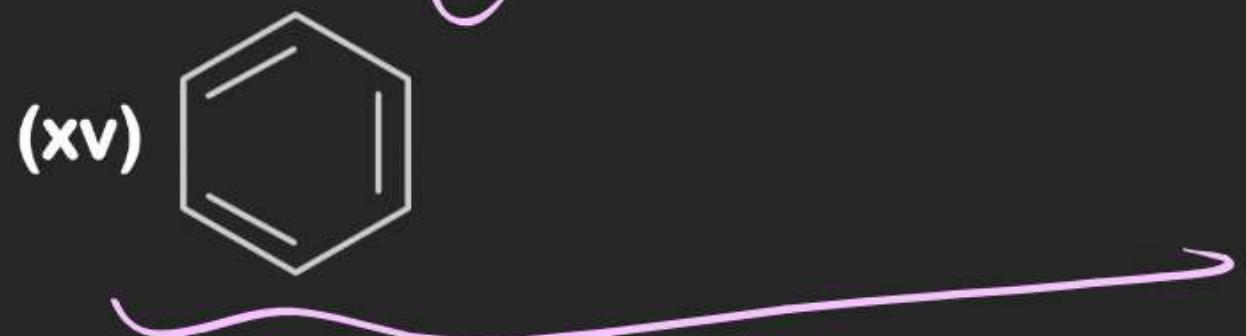
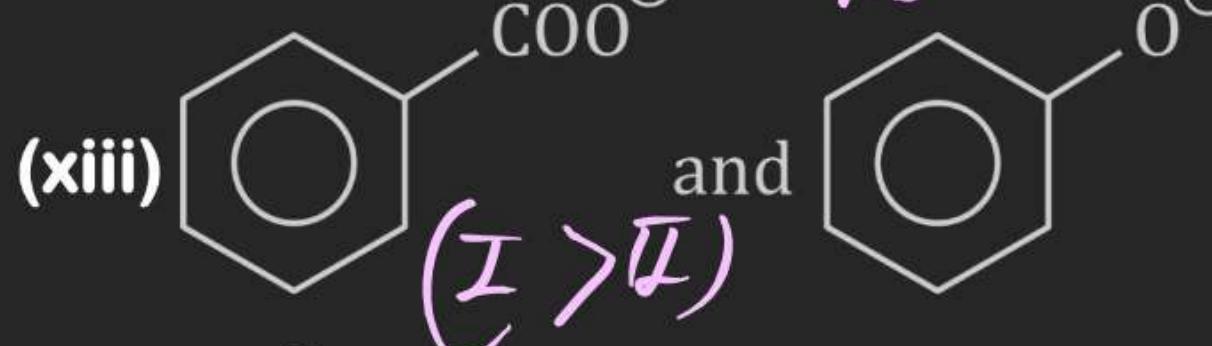
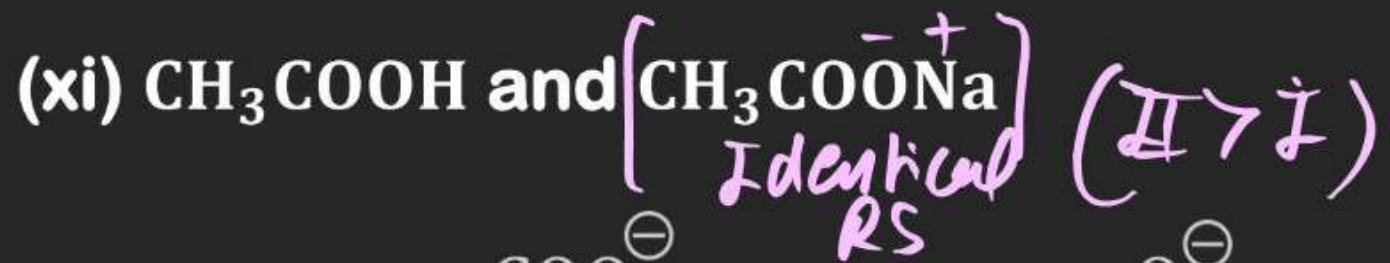


Q.27 In the given pair of compounds select the one in each pair having higher resonance energy:





72



Q.28 In the given pair of compounds select the one in each pair having lesser resonance energy:



3RS

2RS

 $\text{I} > \text{II}$ 

(I)

II

AntiAra $\text{II} > \text{I}$ 

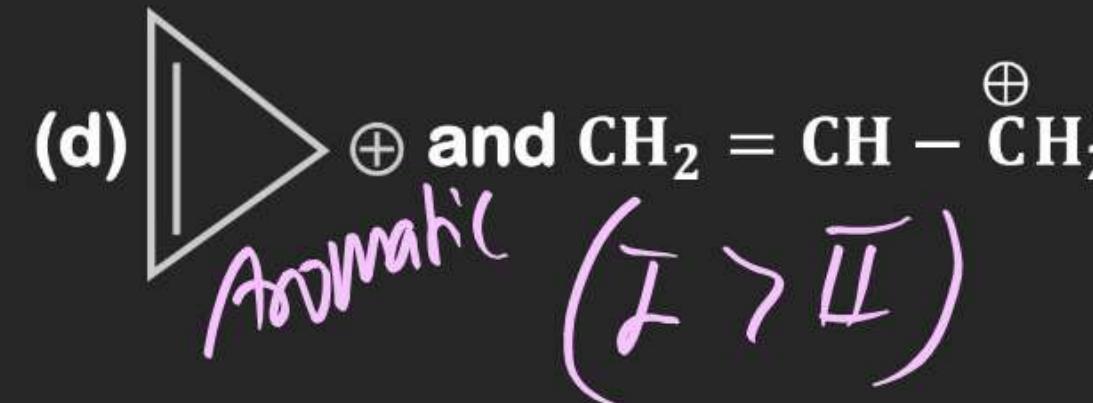
(I)

II

 $\text{II} > \text{I}$ 

(I)

II

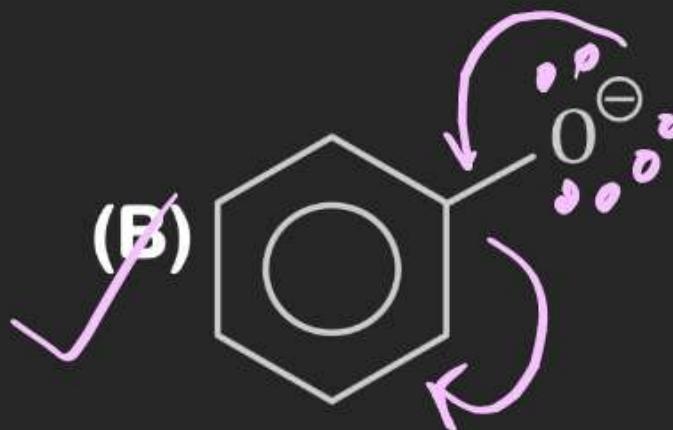


(I)

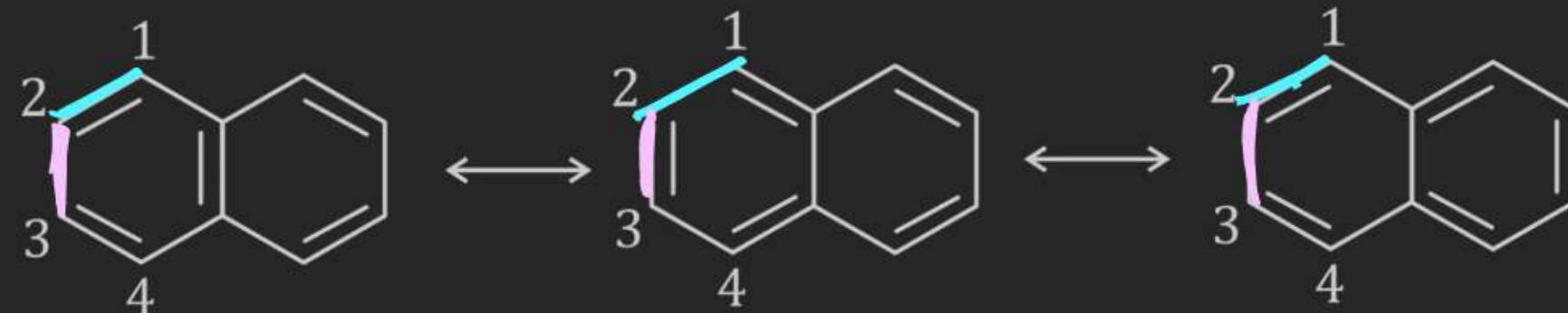
Aromatic

 $\text{I} > \text{II}$

Q.31 In which of the following molecules π -electron density in ring is maximum:



Q.37



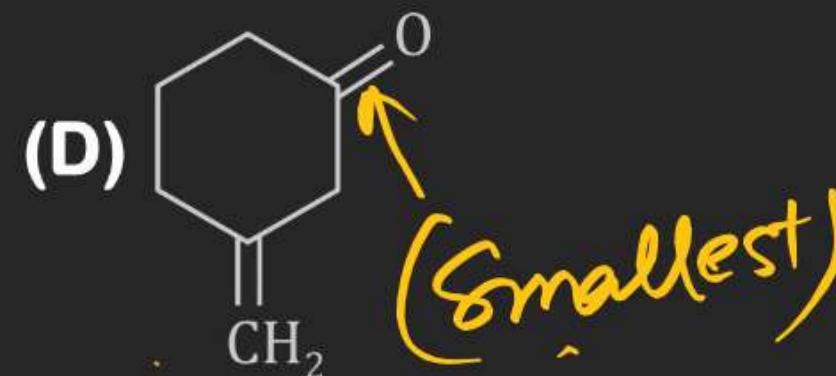
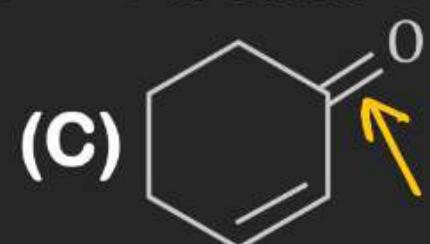
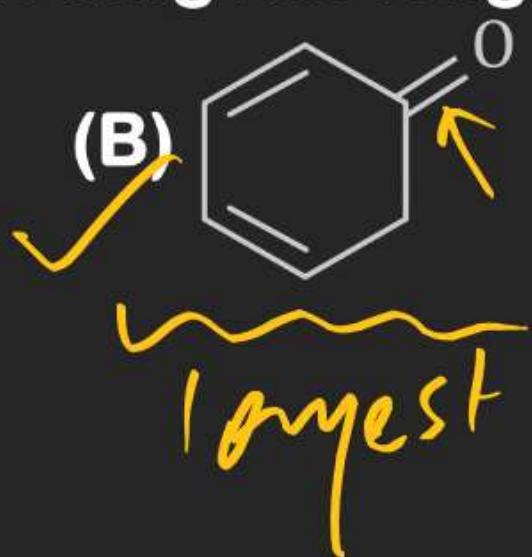
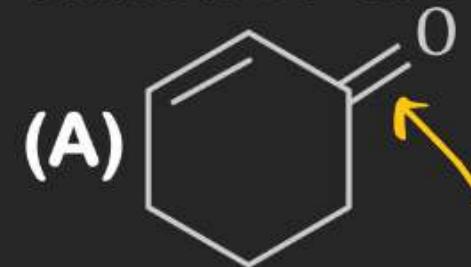
These are three canonical structures of naphthalene. Examine them and find correct statement among the following :

- (A) All C – C bonds are of same length
- (B) C₁ – C₂ bond is shorter than C₂ – C₃ bond.
- (C) C₁ – C₂ bond is longer than C₂ – C₃ bond
- (D) None

$C_1 - C_2$	$C_2 - C_3$	$D\beta$	$S\beta$
<u>$C_1 - C_2$</u>	<u>$C_2 - C_3$</u>	2	1
<u>$C_2 - C_3$</u>	<u>$C_1 - C_2$</u>	1	2

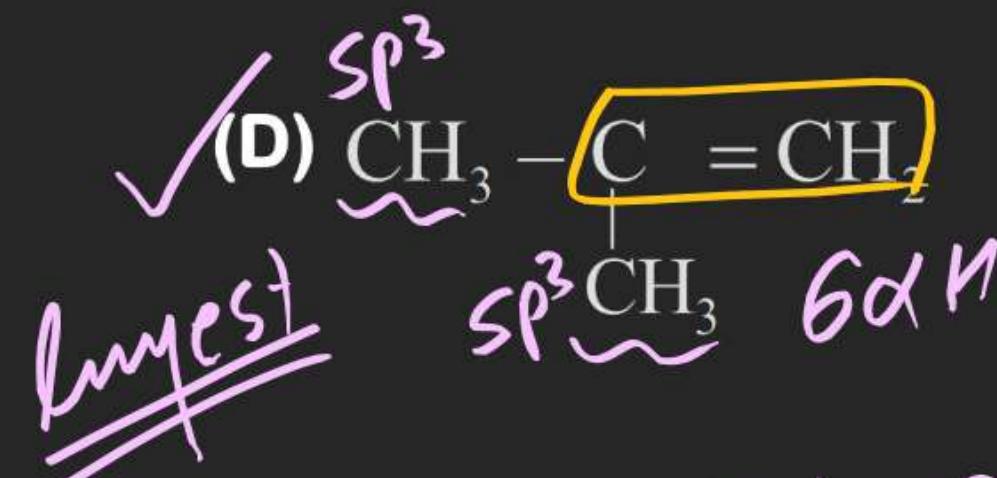
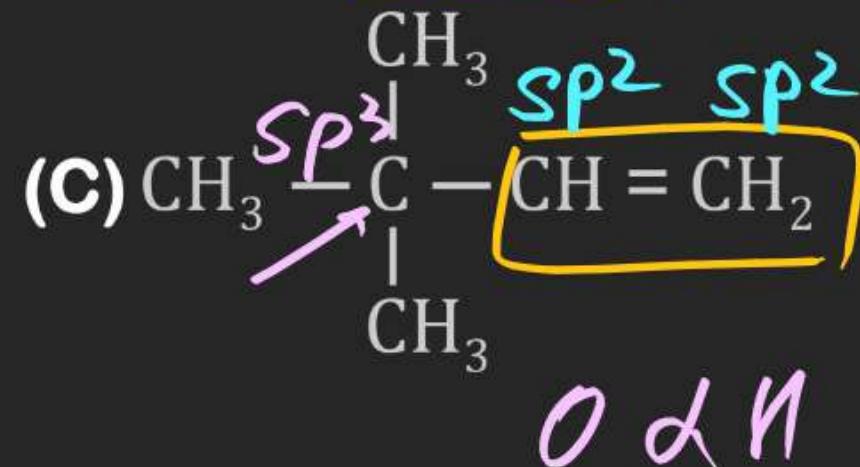
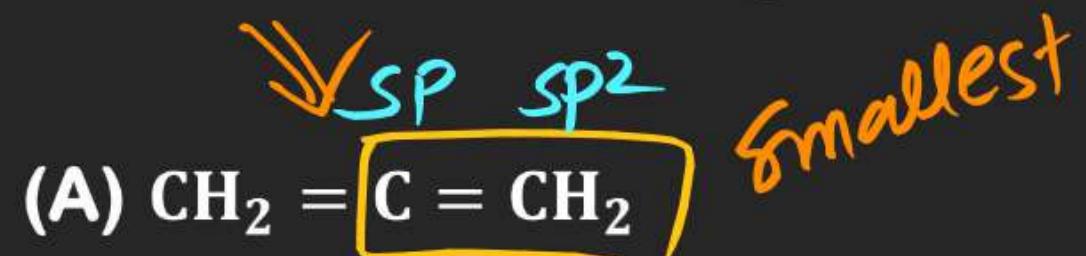
[Bond length]
 $\overline{\overline{C_1 - C_2}} > \overline{C_2 - C_3}$

Q.38 Which of the following has longest C – O bond:



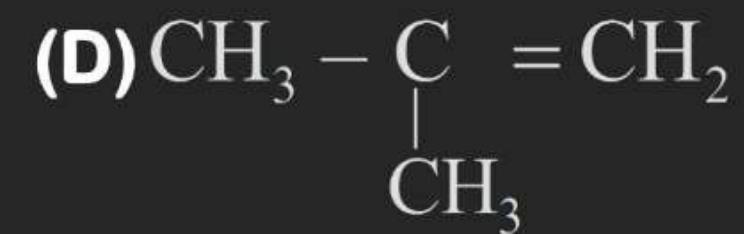
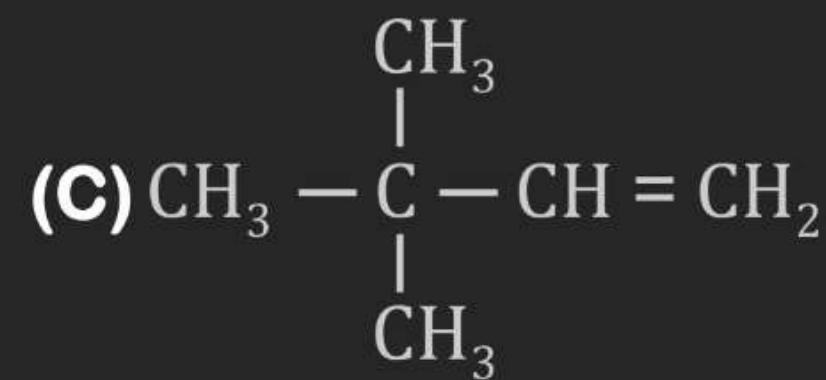
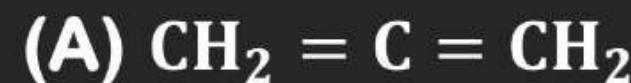
$B > A = C > D$

Q.41 Which of the following molecule has longest C = C bond length?



D > B > C > A

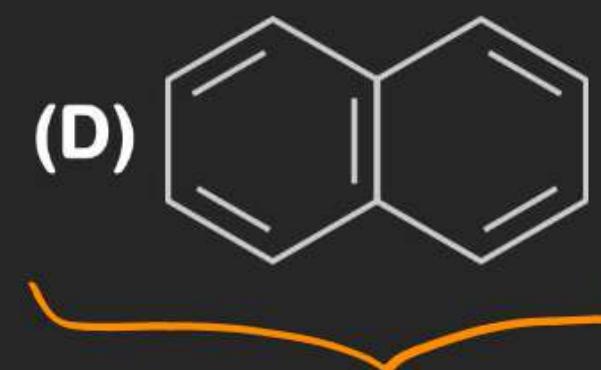
Q.42 Which of the following molecule has **shortest C = O bond length?**



Q.43 $C - C$ and $C = C$ bond lengths are unequal in:



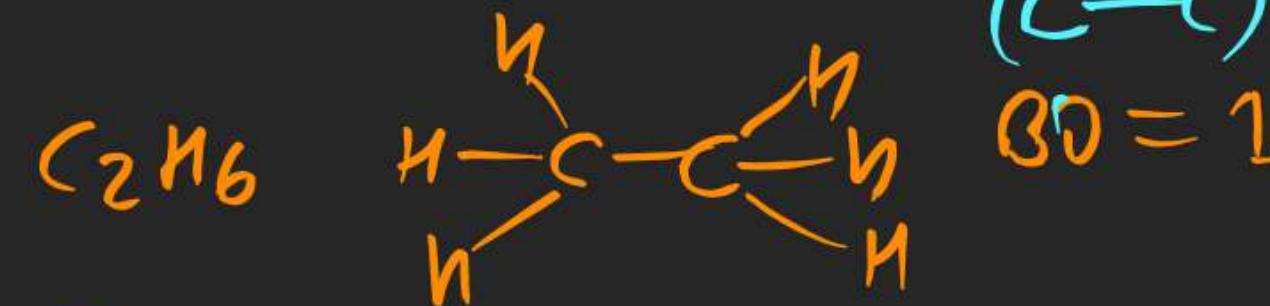
- (B) 1,3-butadiene (C) 1,3-cyclohexadiene



Q.44 Among the following molecules, the correct order of C – C bond length is (C_6H_6 is benzene)

(A) $C_2H_6 > C_2H_4 > C_6H_6 > C_2H_2$

(C) $C_6H_4 > C_2H_6 > C_2H_2 > C_6H_6$



(B) $C_2H_6 > C_6H_6 > C_2H_4 > C_2H_2$

(D) $C_2H_6 > C_2H_4 > C_2H_2 > C_6H_6$

Bond Length
 $C_2H_6 > C_6H_6 > C_2H_4 > C_2H_2$

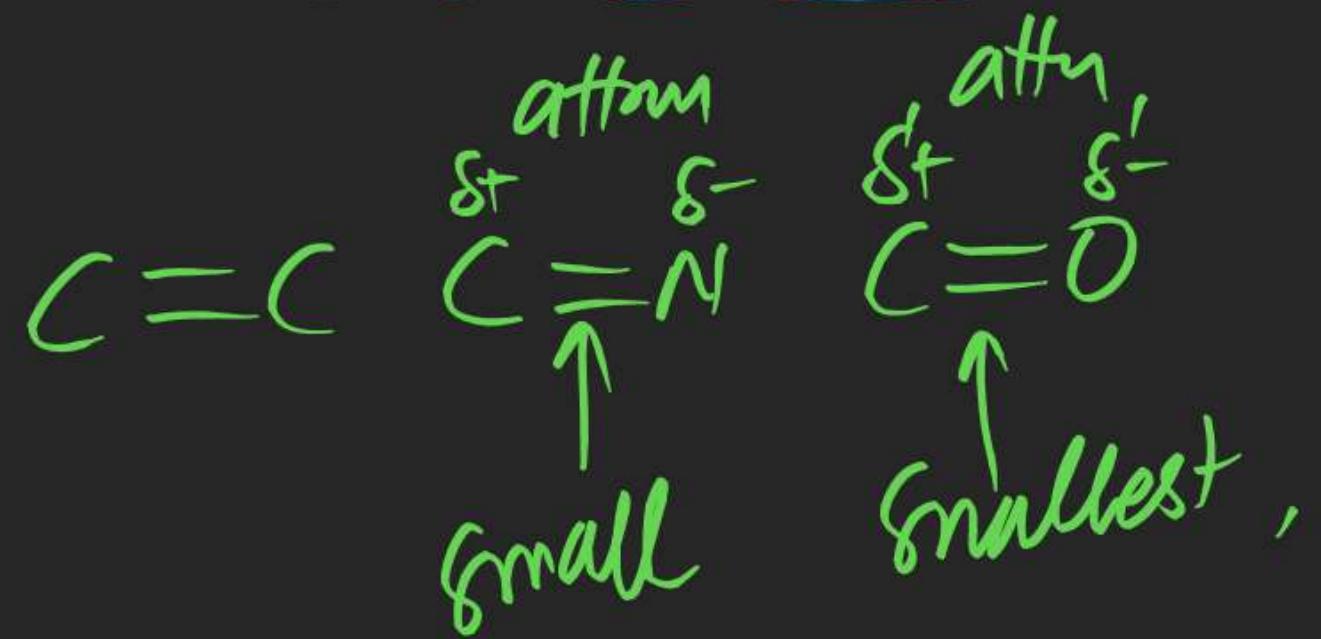
Q.46 Which of the following is (are) the correct order of bond lengths:

- (A) C – C > C = C > C ≡ C > C ≡ N
(B) C = N > C = O > C = C

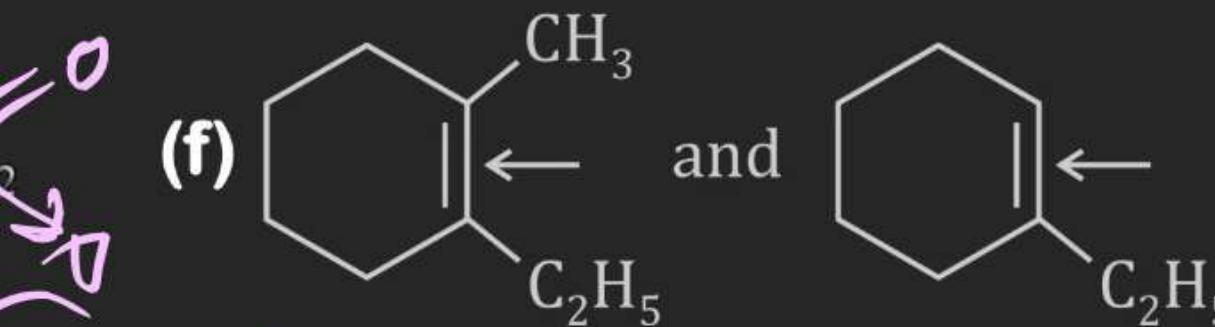
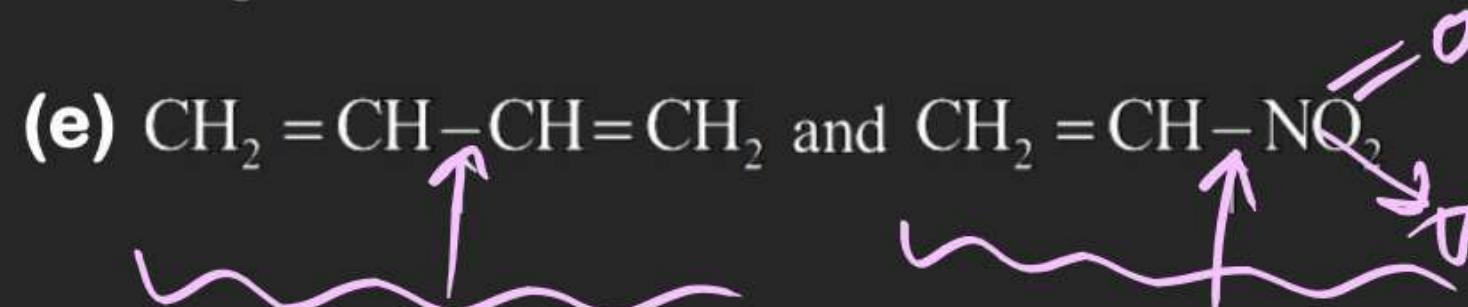
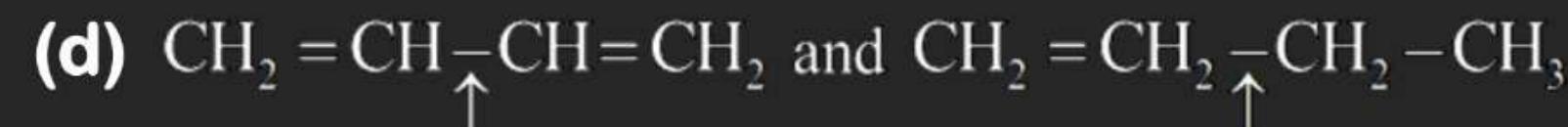
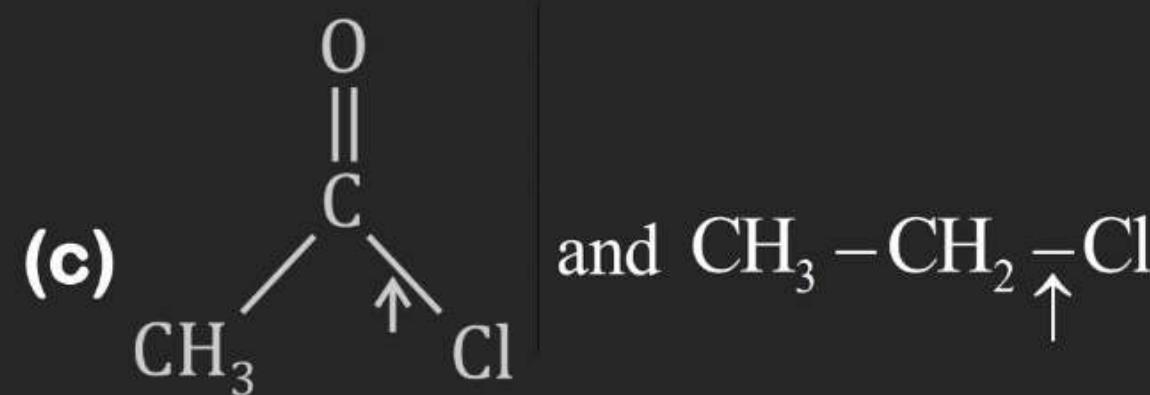
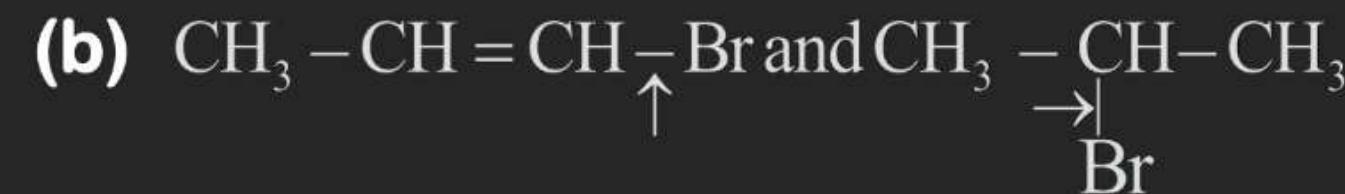
✓ (C) C = C > C = N > C = O

(D) C – C > C = C > C ≡ C > C – H

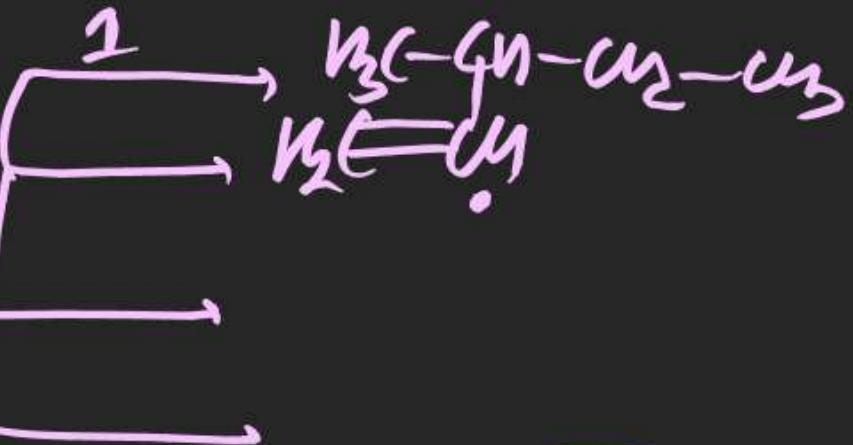
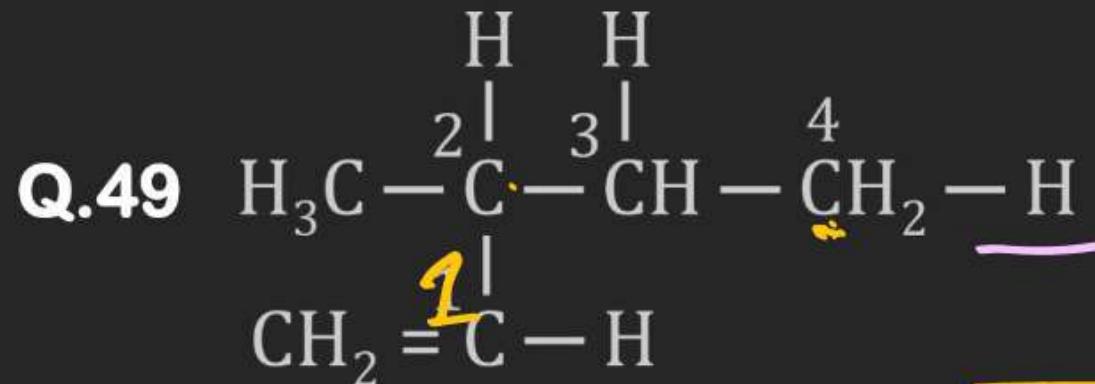
1s



Q.48 In which of the following pairs, indicated bond is of greater strength:



Single Bond \downarrow BS ↑
double \longrightarrow ↑ BS ↑



the correct order of **bond dissociation energy (provided bond undergoes homolytic cleavage)**:

- (A) $\text{C}^2 - \text{H} > \text{C}^3 - \text{H} > \text{C}^4 - \text{H} > \text{C}^1 - \text{H}$
- (C) $\text{C}^1 - \text{H} > \text{C}^4 - \text{H} > \text{C}^2 - \text{H} > \text{C}^3 - \text{H}$

- (B) $\text{C}^2 - \text{H} > \text{C}^3 - \text{H} > \text{C}^1 - \text{H} > \text{C}^4$
- (D) $\text{C}^1 - \text{H} > \text{C}^4 - \text{H} > \text{C}^3 - \text{H} > \text{C}^2 - \text{H}$

Q.51 In which case, C – O bond length is shorter for 1st compound:

