Nishant Jindal

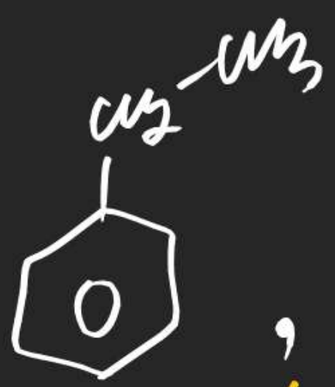
STEREOISOMERISM

HW (Discussion)

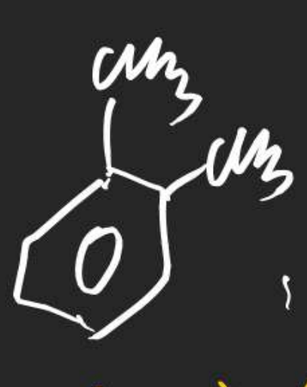
(20) C_8H_{10} (Benzenoid)

1 ($-CH_2-CH_3$)

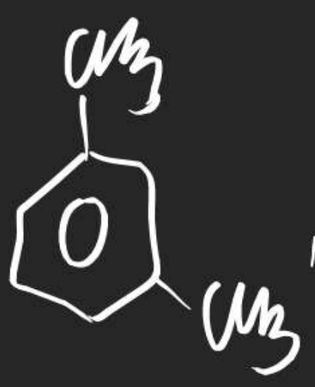
2 ($-CH_3$)



(o-xylene)



(m-xylene)



(p-xylene)

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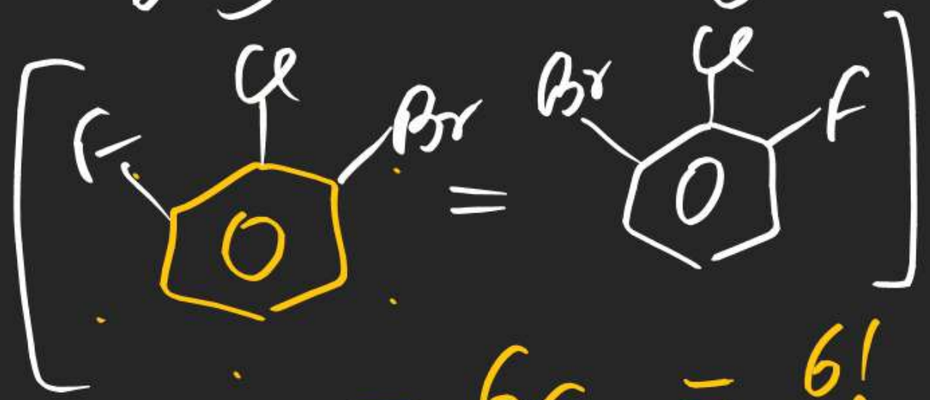
(21) $C_6H_3F\overline{Cl}\overline{Cl}\overline{Br}$ (Benzenoid)

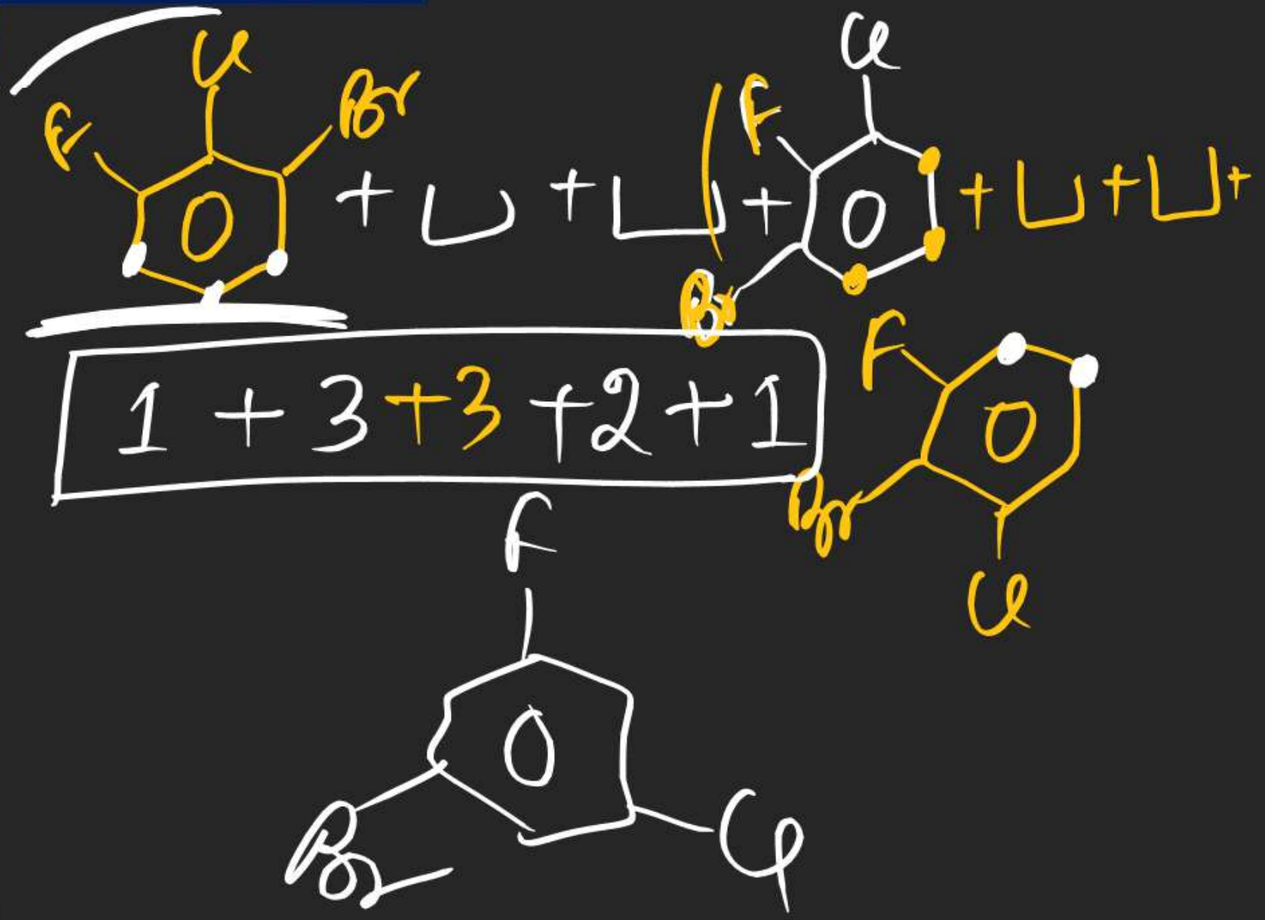


$$= {}^{6}C_3 = \frac{6!}{3!\,3!}$$

$$= \frac{6 \times 5 \times 4 \times \cancel{3!}}{3 \times 2 \times \cancel{3!}}$$

$$= 20$$

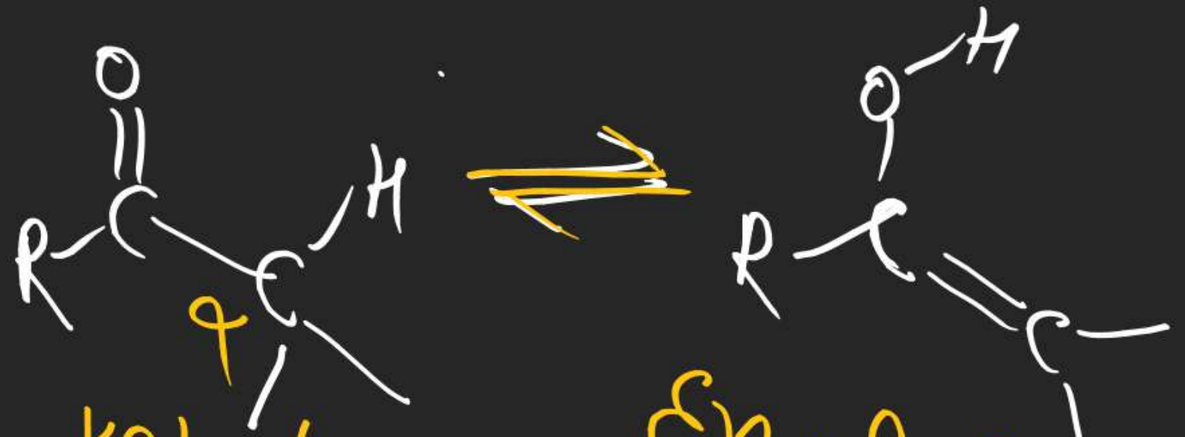
Possible isomers $= \frac{20}{2} = 10$



(2) Triad System :-

when Oscillation takes place b/w atom no. 1 to 3 & 3 to 1, system is known as Triad System.

EX-1 : Keto Enol Tautomerism :-



Keto form Enol form

$$K_{eq} = \frac{[Enol]}{[keto]}$$

$BE_{keto} = BE_{C-R} + BE_{C=O} + BE_{C-C} + BE_{C-H} =$ 

$BE_{Enol} = BE_{C-R} + BE_{C-O} + BE_{O-H} + BE_{C=C} =$ 

Since $BE_{keto} > BE_{Enol}$

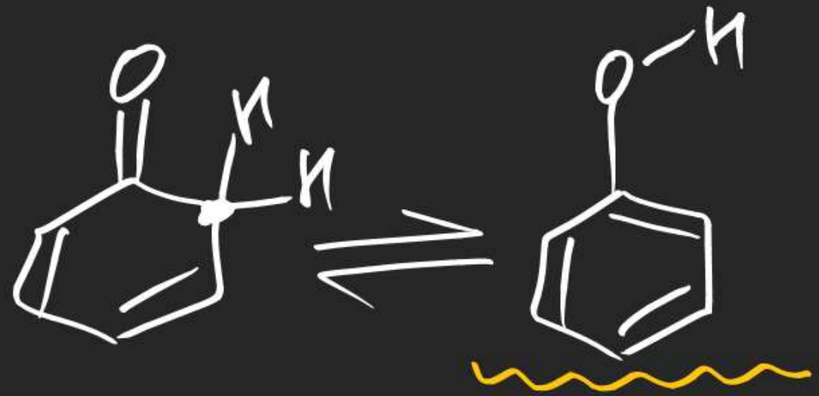
hence $\Rightarrow$ keto form dominates over Enol form

$\Rightarrow [keto] > [Enol]$ At Equilibrium.

$\Rightarrow K_{eq} < 1$

[Enol] > [keto] if

(a) Enol is Aromatic

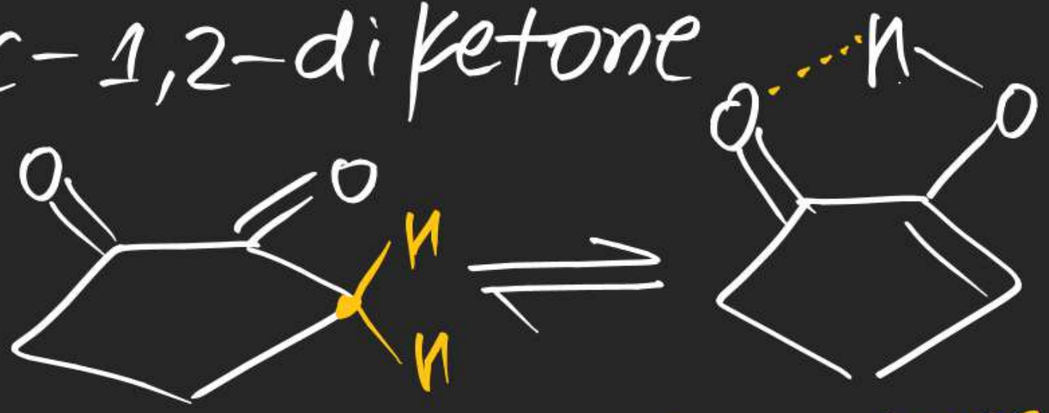


(b) Keto is 1,3-dicarbonyl (Aldehyde / Ketone) with Acidic $-CH_2-$ group.

Conjugated Enol

M.T.G

(C) Cyclic-1,2-diketone



Conjugation & Chelation

Ex-2: Imine - Enamine Tautomerism

Keq < 1

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Ex-3: Nitro - Aci Nitro Tautomerism:

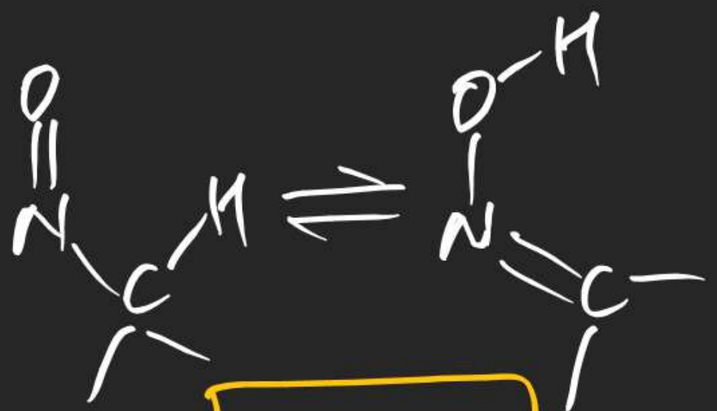
$K_{eq} < 1$

Ex-4:

$K_{eq} < 1$

Amide - Imino Tautomerism

Ex-5 Nitroso - Oxime Tautomerism



$K_{eq} > 1$

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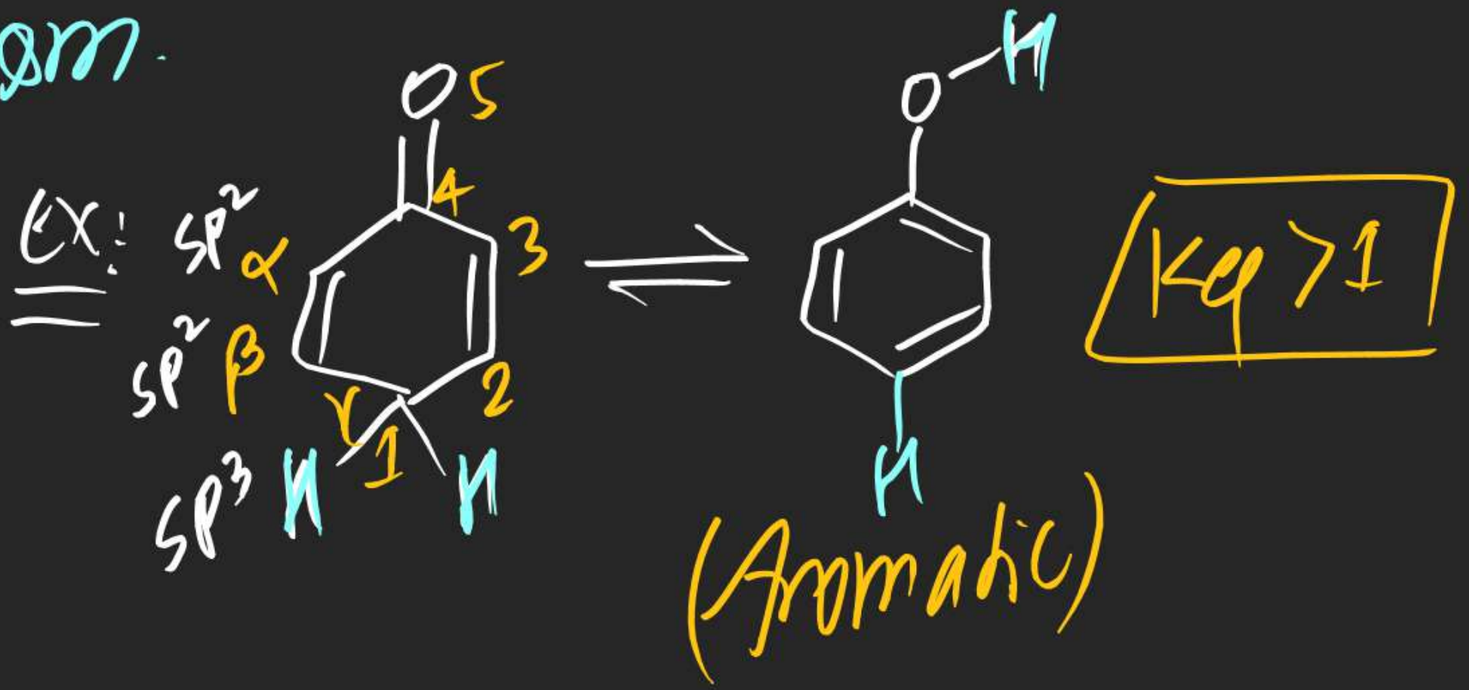
(#) Space Tautomerism :

other than Diad & Triad, it is known as Space Tautomerism.



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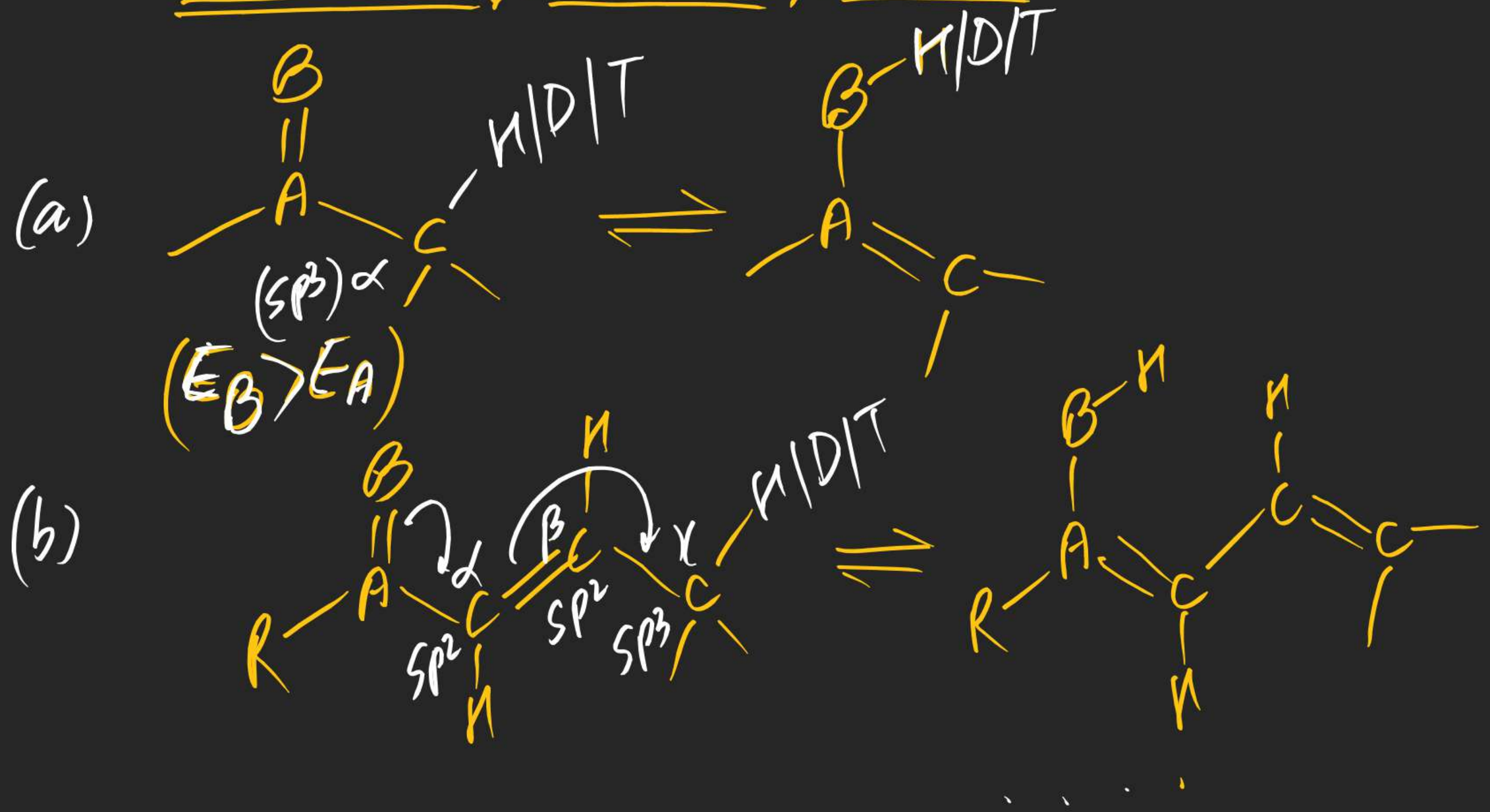
Condition for Tautomerism :



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Q: Find Compounds which can show Tautomerism & also Draw first two stable tautomers.

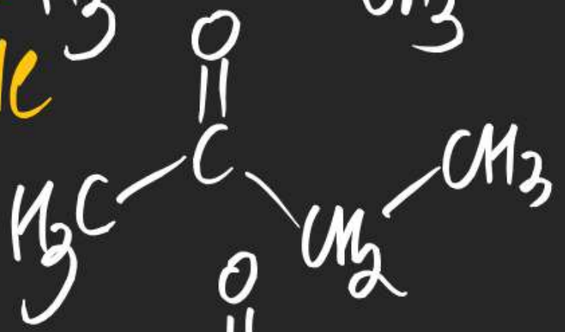
(1)

most stable

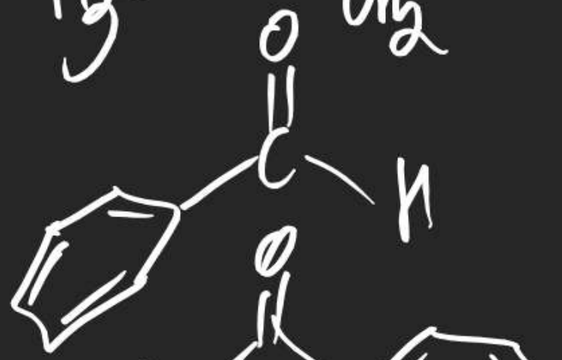
II - most stable

yes

(2)



(3)



(4)

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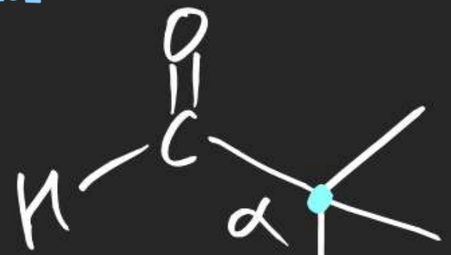
(5)



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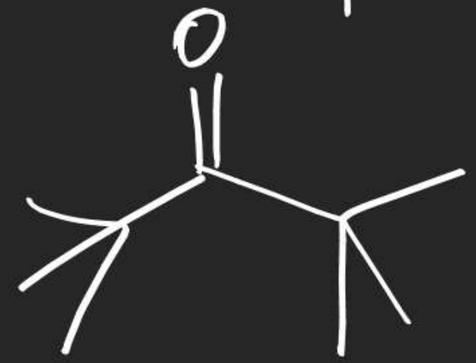
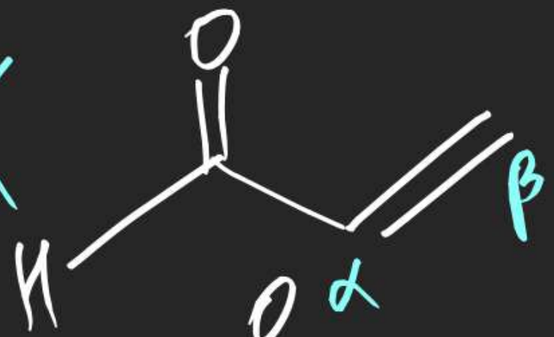


(7)



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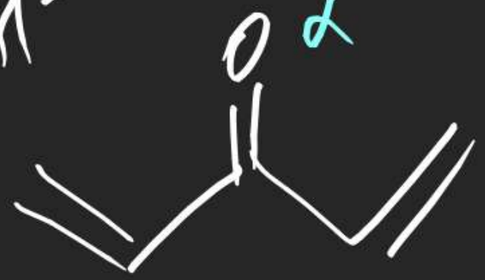

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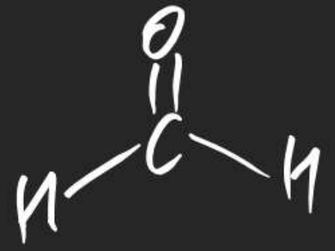
(9)



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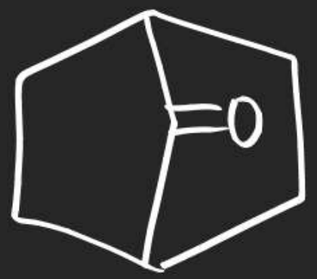

(11)

(12)

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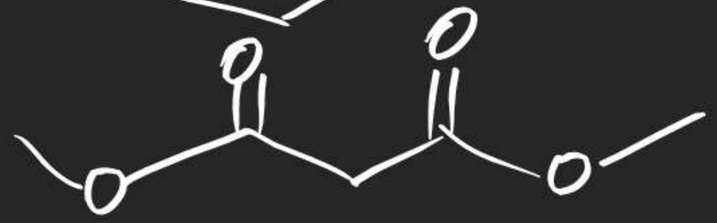
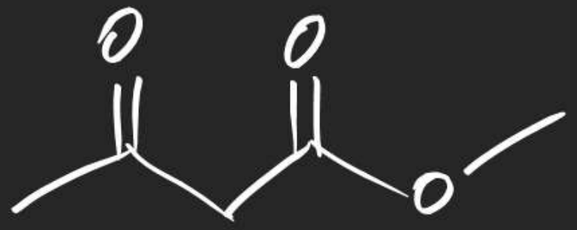
(13) 

(14) 

(15) 

(16) 

(17) 

Phenyl ()

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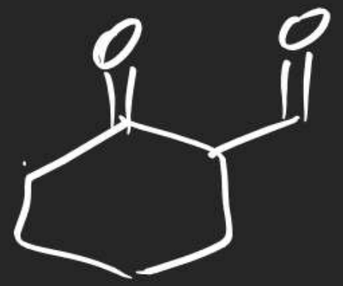
(18)



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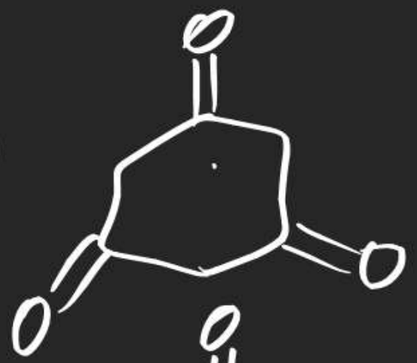
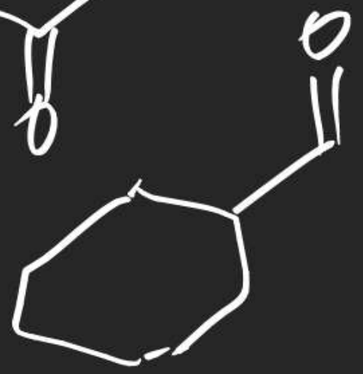


(20)

(21)



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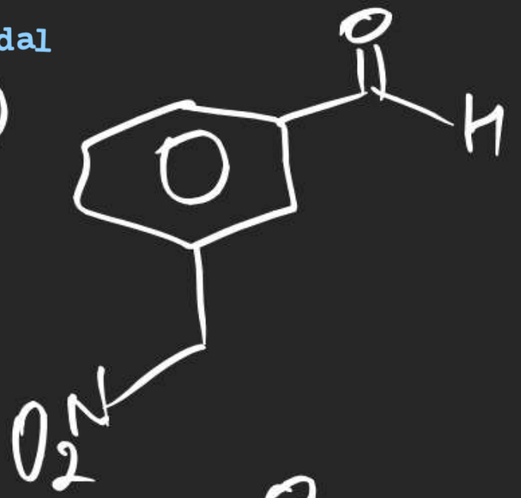
(22)



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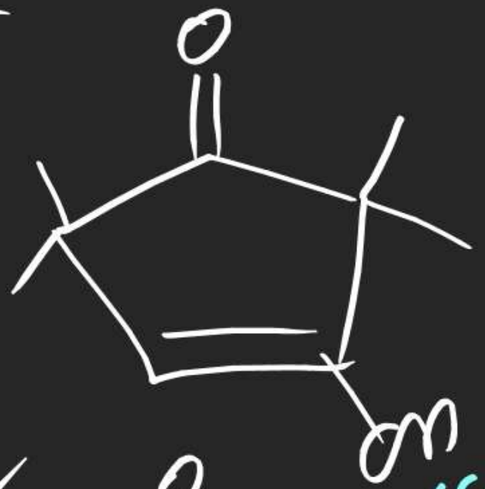

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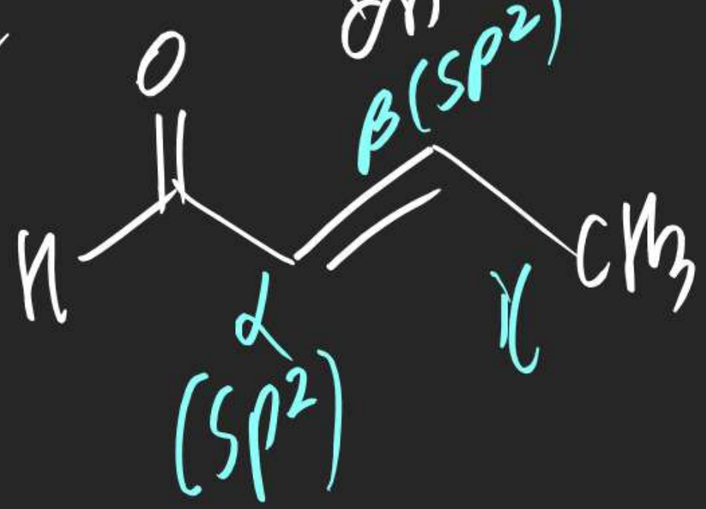

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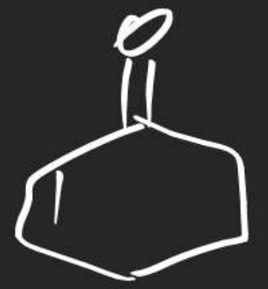
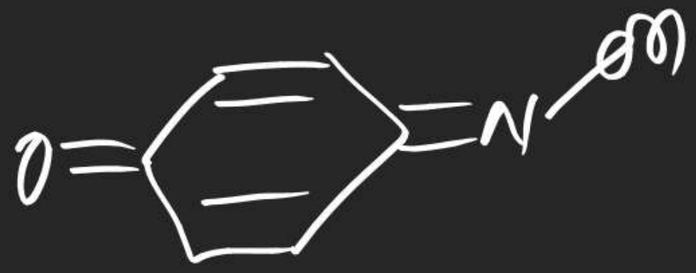


(26)

(27)



(28)

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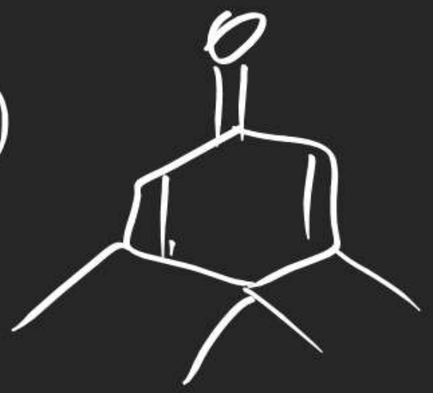
(29) 

(30) 

(31)

ax Not tautomers