Dipole Moment - II

Course on Chemical Bonding for Class XI 2023

Vishal joshi • Lesson 14 • Sept 11, 2021

$$S - s > p - p$$

$$d - d > p - p$$

hence

$$S - s > d$$

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▲ 5 • Asked by Ankitjha

Please help me with this doubt

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▲ 4 • Asked by Xi Priyans...

sir aap kitne young aur pyare dikh rhe ho is photo mein

2008-09

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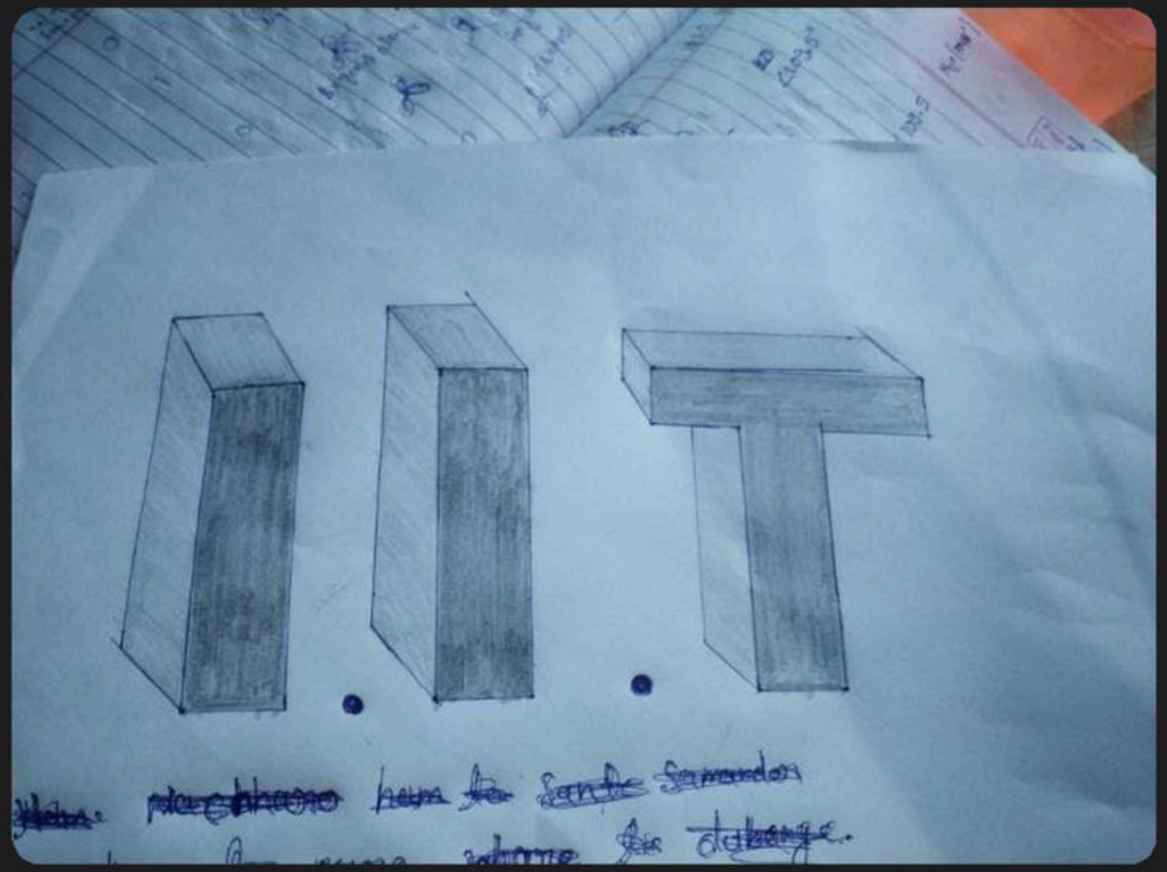
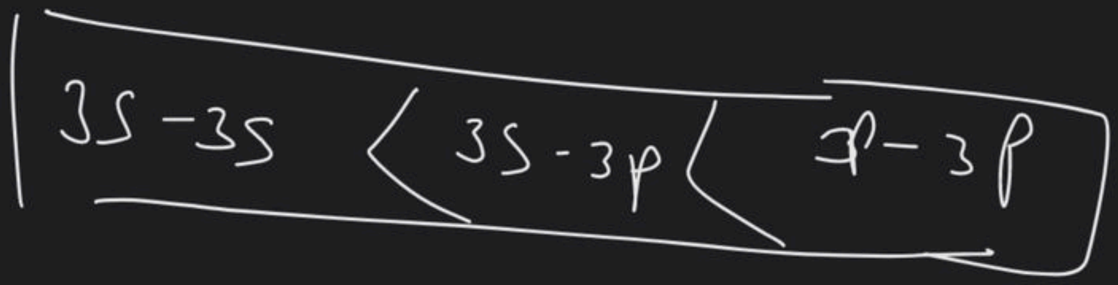
▲ 3 • Asked by Ashutosh Y...

Pranaam sir plzz VC par hamaare vo lijiye



$3p_\pi - 3p_\pi$ $\quad$ $3p_\uparrow - 3d_\uparrow$ $\quad$ $3d_\pi - 3d_\pi$



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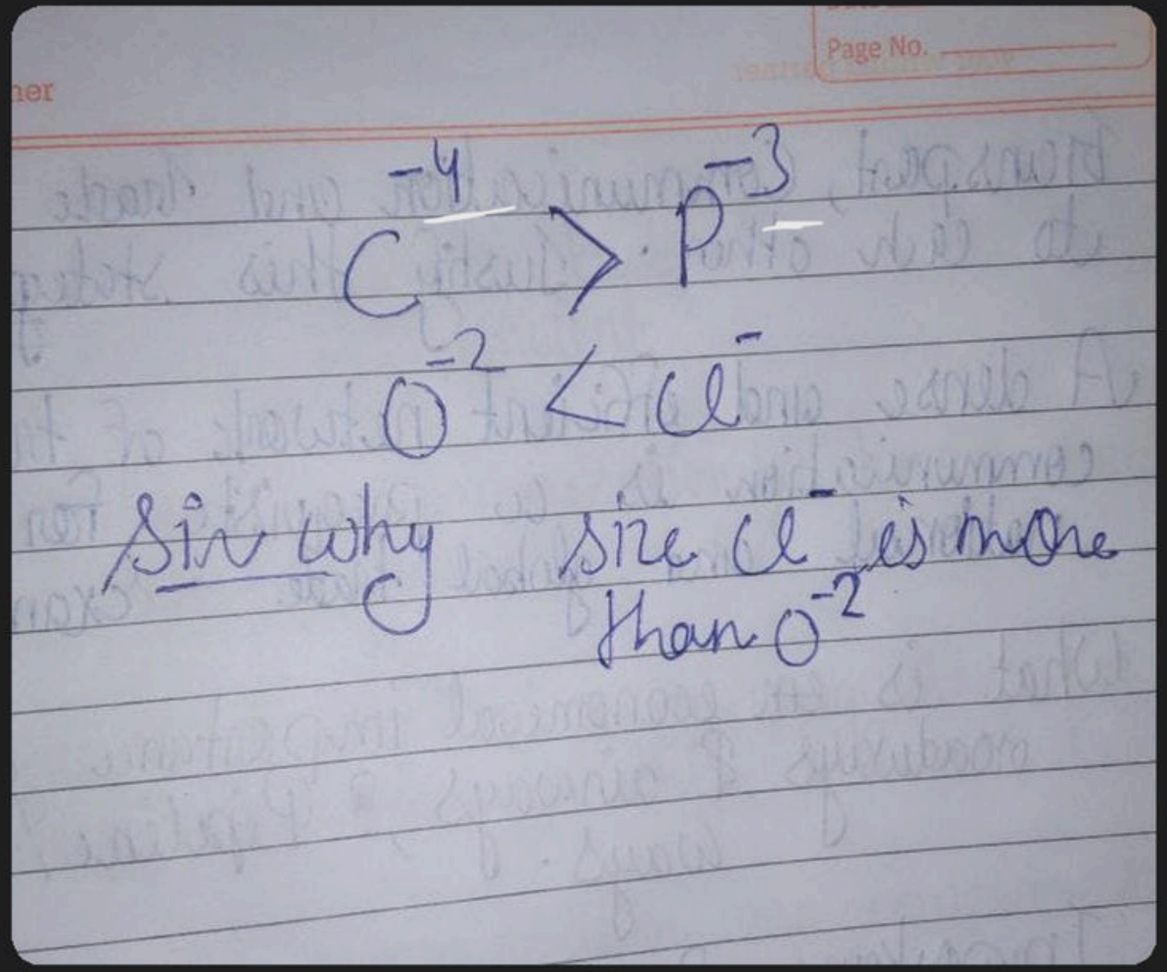
▲ 2 • Asked by Amit

Please help me with this doubt

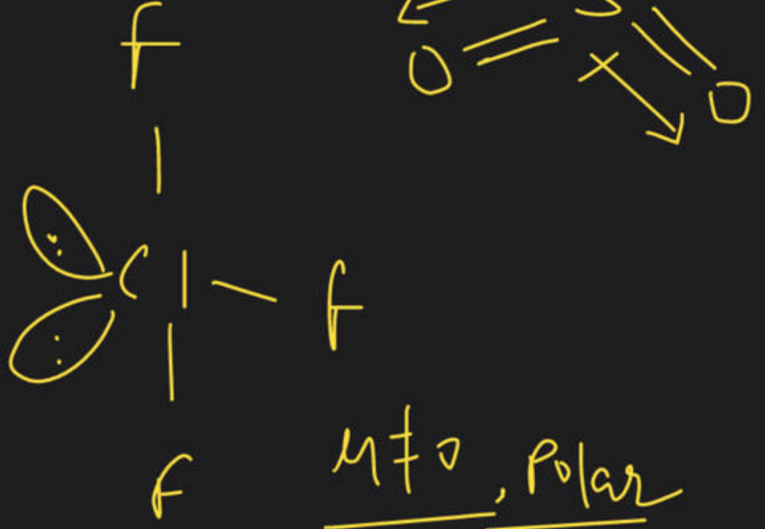


Q11 Which of the following molecules are planar and non polar

① O_3 ② ClF_3 ③ SO_3 ④ none

$\mu \neq 0$

Polar

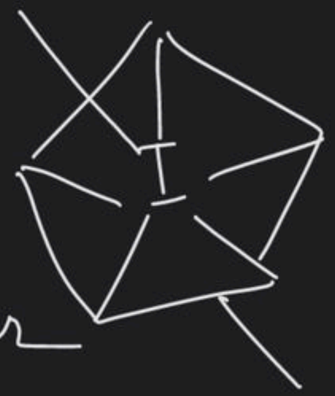


$\mu \neq 0$, Polar

Ans

Which of the following molecule is non planar and non polar

(a) IF_7

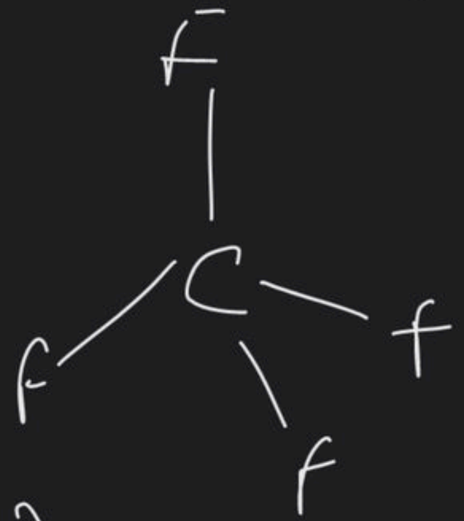


non planar

$\mu = 0$

non polar

(2) CF_4

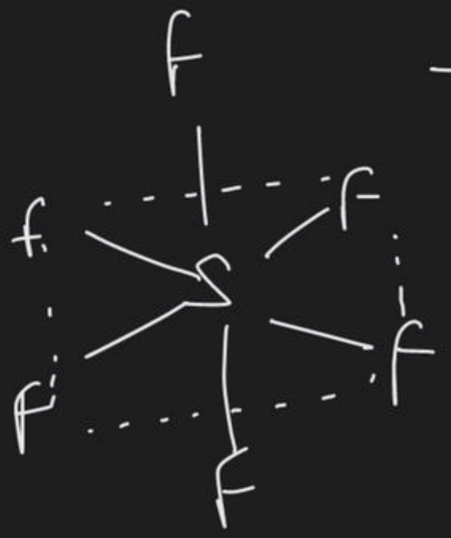


non planar

$\mu = 0$

non polar

(3) SF_6



non planar

$\mu = 0$

non polar

(4) all

Which of the following molecule is planar and polar

(1) I_3^+ (2) $HgCl_2$ (3) XeF_5^- (4) all

$\mu \neq 0$, Polar

Planar

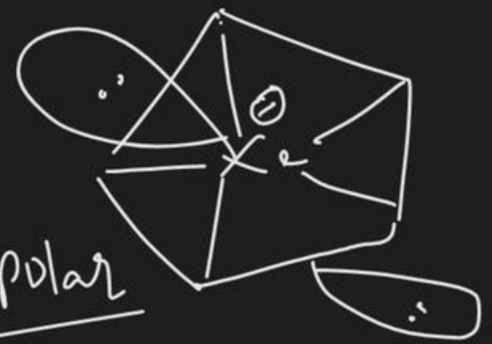
$Cl - Hg - Cl$

$\mu = 0$

Non polar

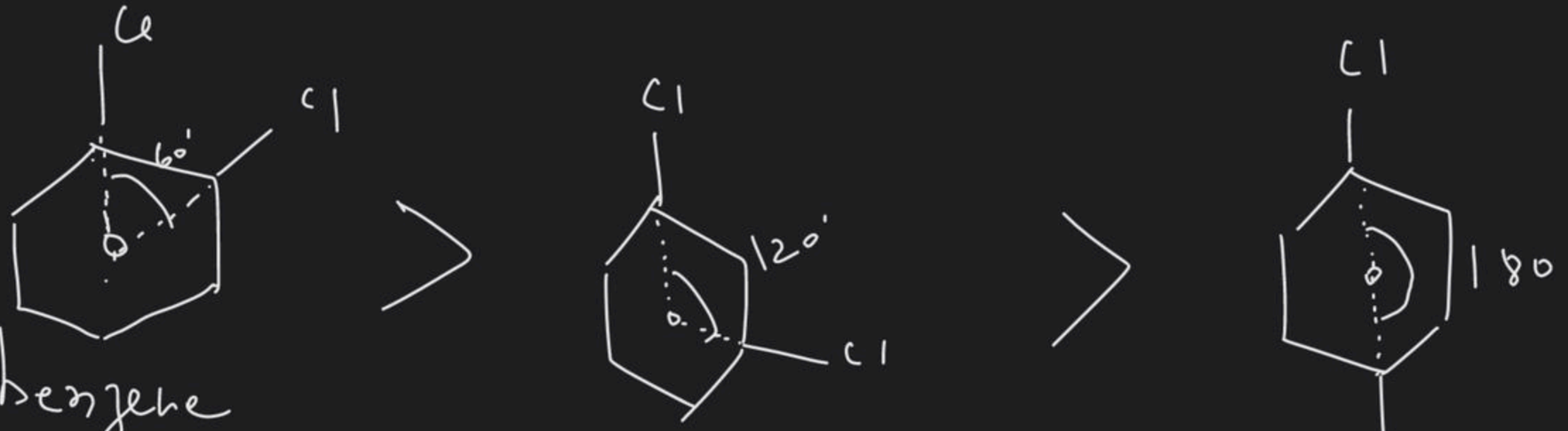
Polar

Hg = $6s^2$



Non polar

$\mu = 0$



di chloro benzene

Ortho

Meta

Para

$$\mu_R = \sqrt{\mu_1^2 + \mu_2^2 + 2\mu_1\mu_2 \cos\theta}$$

$\theta = 0$

$\cos 0 = 1$

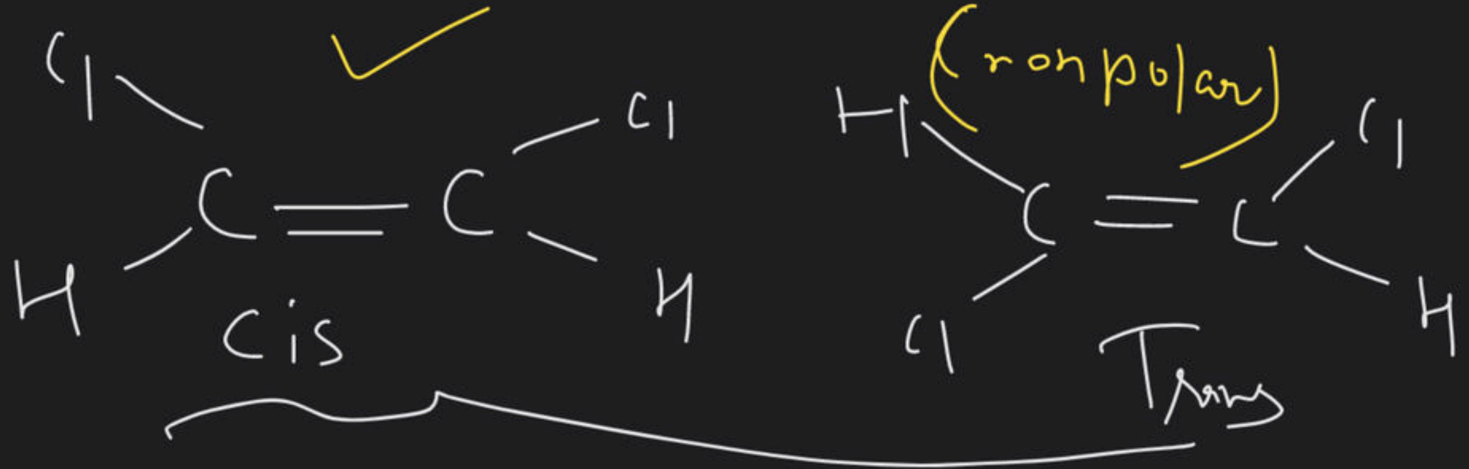
$\mu_R = |\mu_1 + \mu_2|$

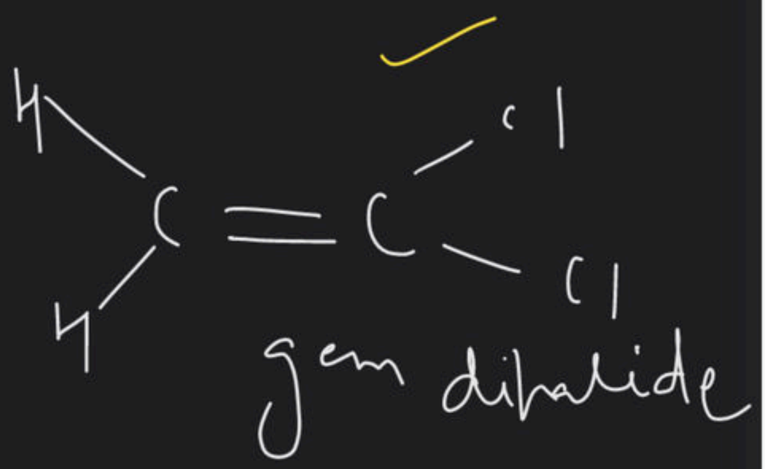
$\theta = 180$

$\cos 180 = -1$

$\mu_R = |\mu_1 - \mu_2|$

$C_2H_2Cl_2$ find the number of polar isomer of this compound



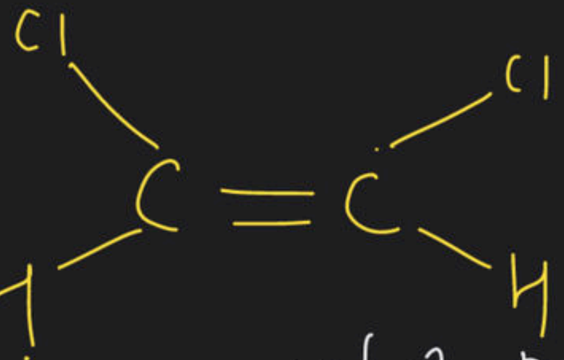


Vicinal dihalide

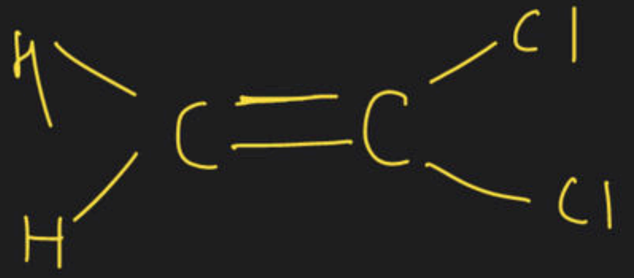
(a) 1 (b) 2 (c) 3 (d) none

$C_2H_2Cl_2$

Cis

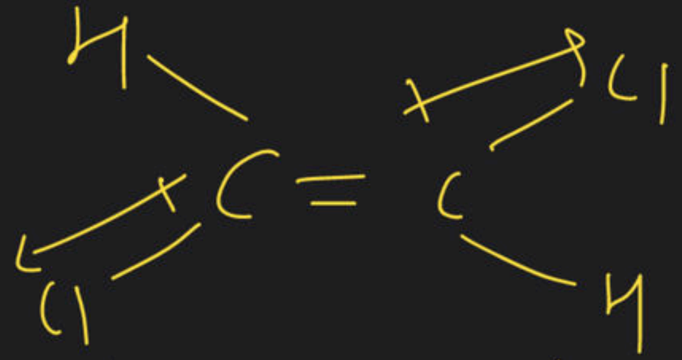


Vicinal $\mu \neq 0$, Polar



Gem $\mu \neq 0$ Polar

Trans



$\mu = 0$, non polar

dipole moment ↑ Ionic ch. ↑

$$\% \text{ Ionic ch} = \frac{\mu_{ob}}{\mu_{th}} \times 100$$

μ_{ob} = given

μ_{th} = e × d esu × cm

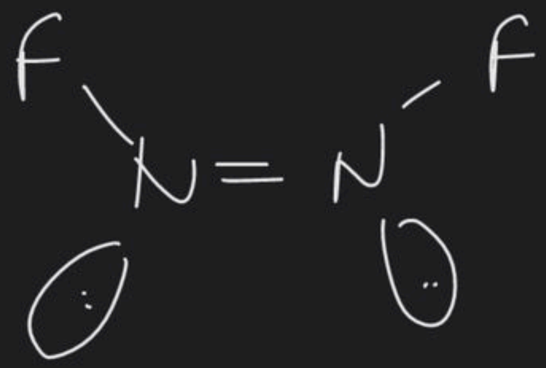
Calculate % Ionic Ch. in HCl molecule if observed dipole moment is 1.03D and distance is 1.24 A°

$$= \frac{1.03 \times 10^{-18} \text{ esu} \times \text{cm}}{4.8 \times 10^{-10} \text{ esu} \times 1.24 \times 10^{-8} \text{ cm}} \times 100$$

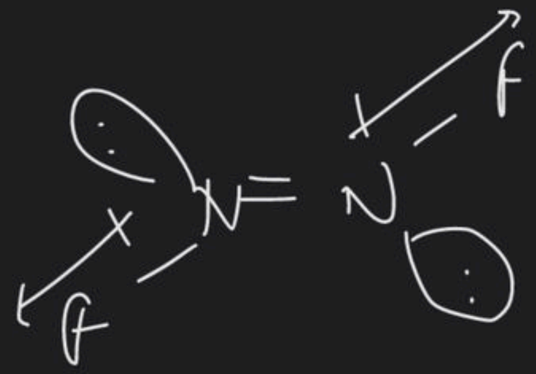
$$17.3\%$$

Qu.

N_2F_2



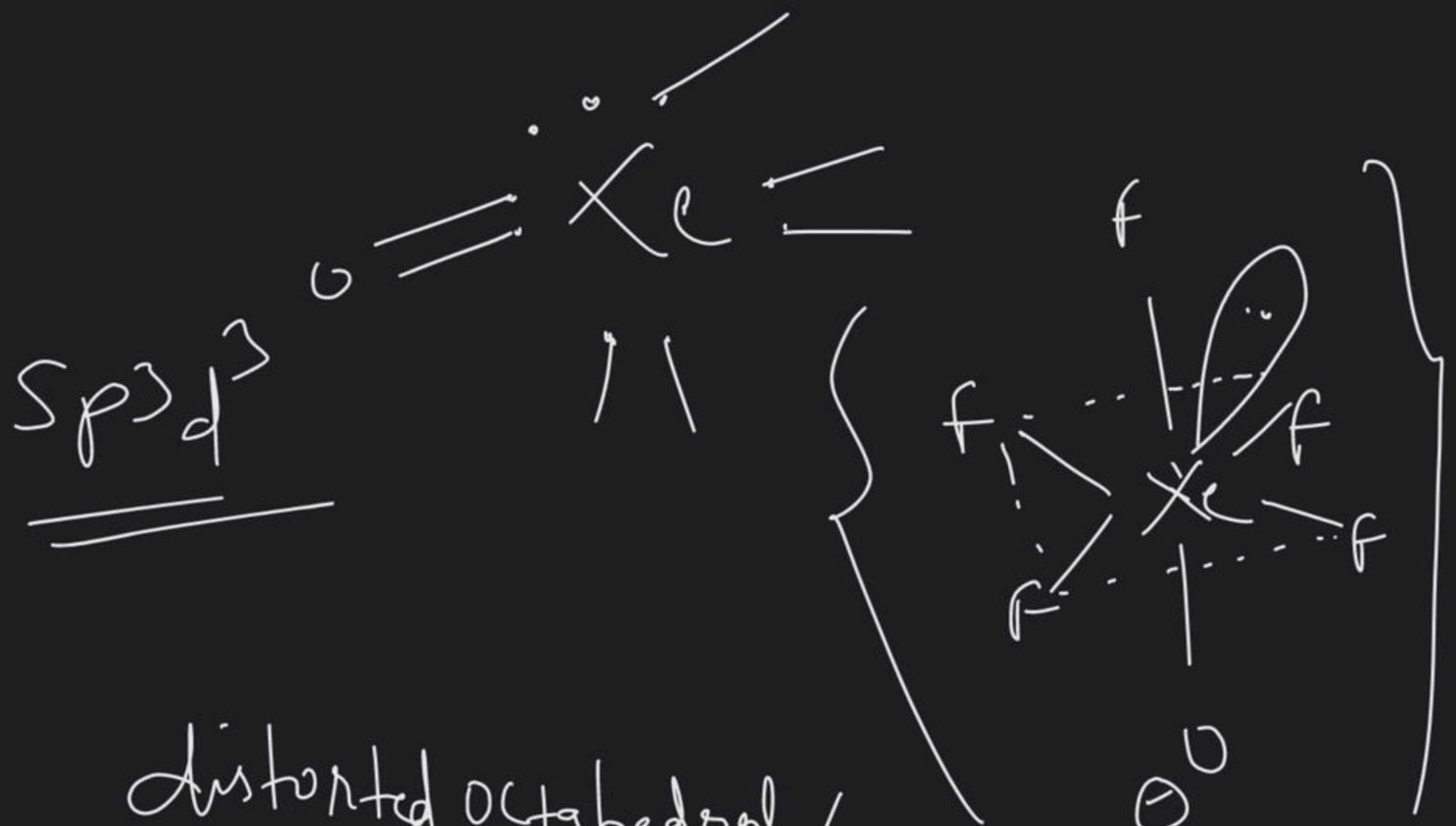
(dipole moment) $\mu \neq 0$ polar



$\mu = 0$

non polar

Draw the Structure of $XeOF_5^-$

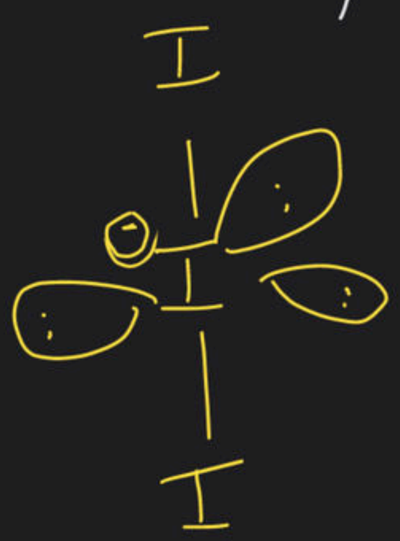


sp^3d^3

distorted octahedral / Capped octahedral

Q. Which of the following set of molecules are planar but have diff hybrid. A

(a) $I_3^{\ominus}$, XeF_2 (b) H_3O^+, NH_3 (c) $I_3^{\oplus}$, ClF_3 (d) none



sp^3d

planar

sp^3d

planar

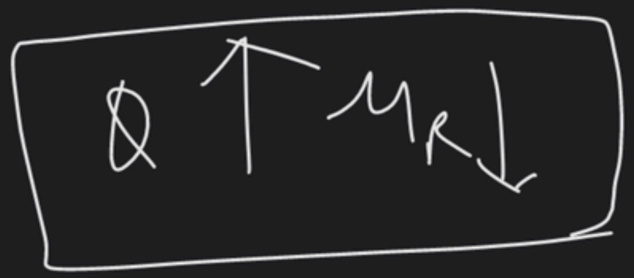
sp^3

Planar

sp^3d

planar

only



Keypoint

QT MRI