

Chemical bonding

101. In SNF_3 , the $\angle \text{FSF}$ should be :

(A) less than 120° and more than $109^\circ 28'$

(B) less than $109^\circ 28'$

(C) less than 180° and more than 120°

(D) Exactly equal to $109^\circ 28'$

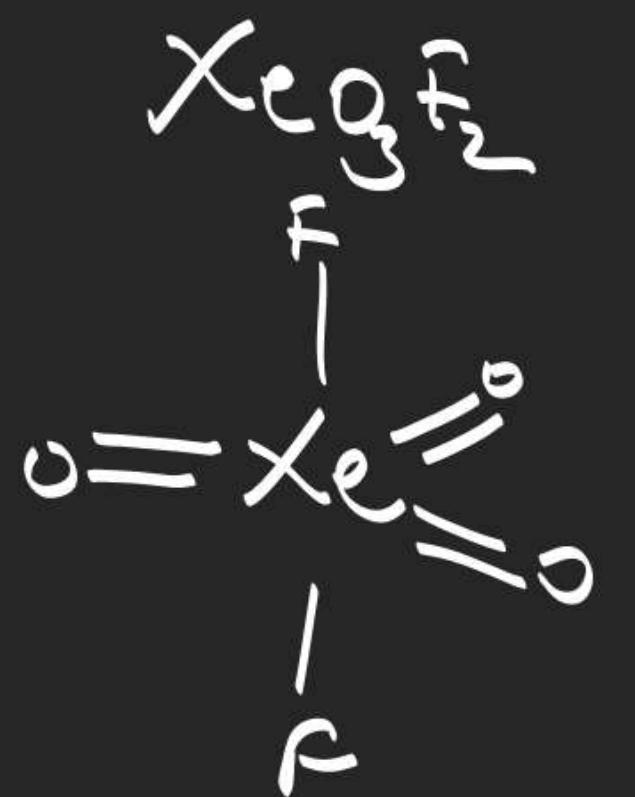


Chemical bonding

102. Give the correct order of initials T or F for following statements.

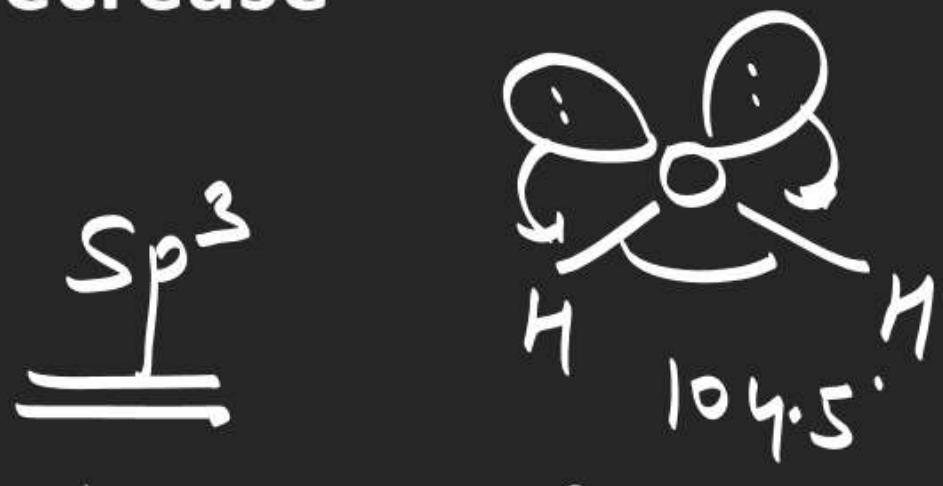
Use T if statement is true and F if it is false :

- (I) The order of repulsion between different pair of electrons is
 $I_p - I_p > I_p - b_p > b_p - b_p$
- (II) In general, as the number of lone pair of electrons on central atom increases, value of bond angle from normal bond angle also increases
- (III) The number of lone pair on O in H_2O is 2 while on N in NH_3 is 1 ~~Xe~~
- (IV) The structures of xenon fluorides and xenon oxyfluorides could not be explained on the basis of VSEPR theory
- (A) TTTF (B) TFTF (C) TFTT (D) TFFF



Chemical bonding

103. The H – C – H bond angle in CH_4 is 109.5° , due to lone pair repulsion, the H – O – H angle in H_2O will

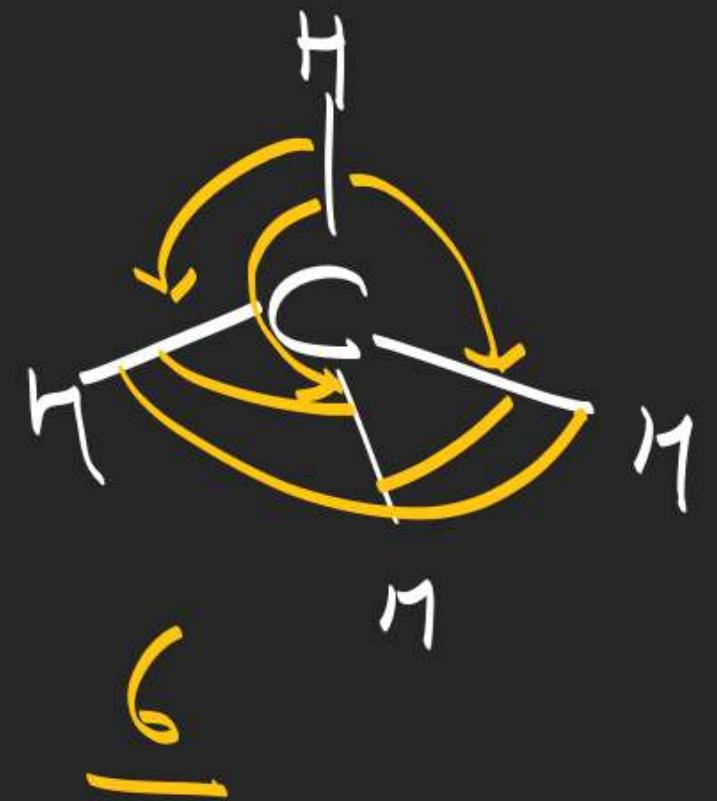


tetrahedral

109.5

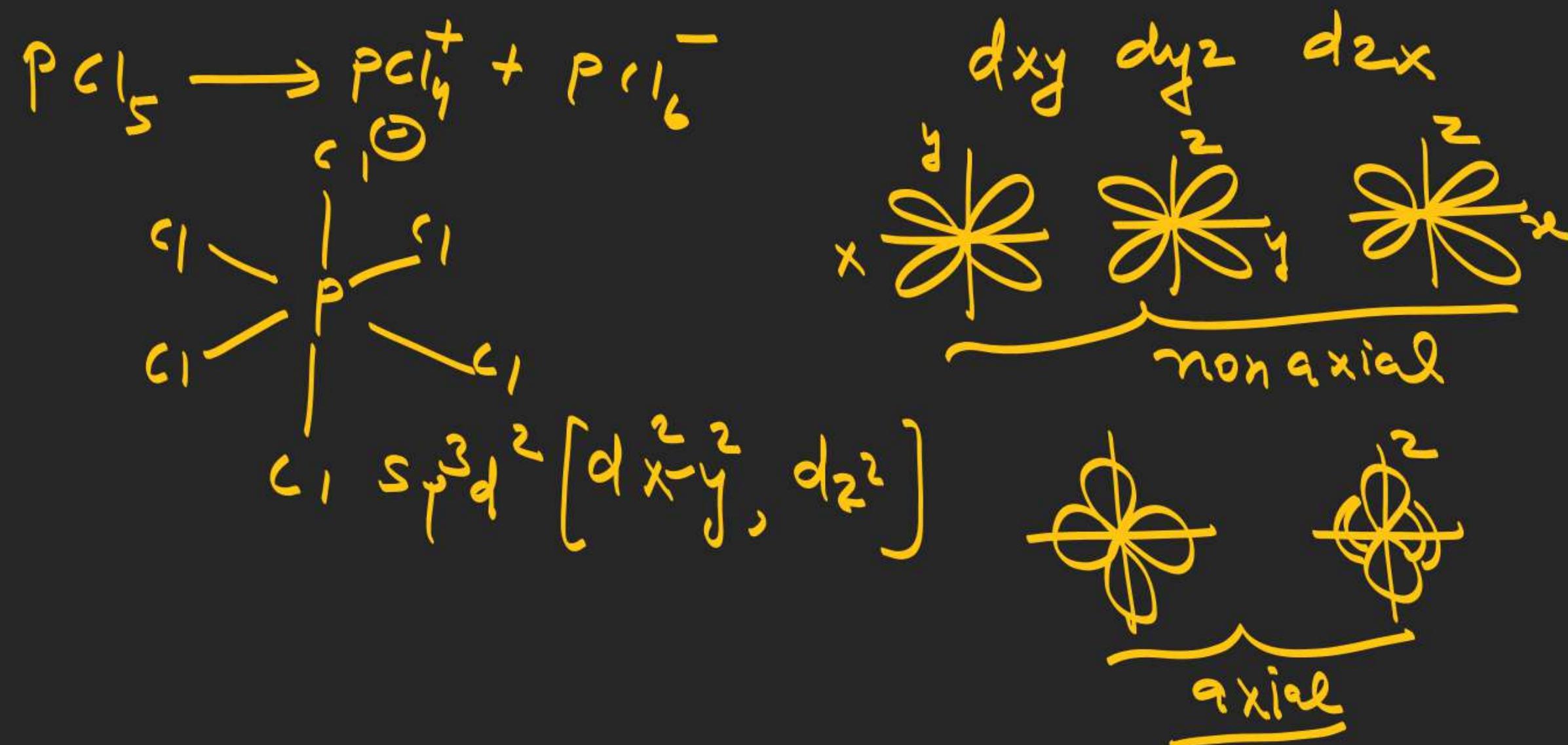
Chemical bonding

104. The compound MX_4 is tetrahedral. The number of $\angle \text{XMX}$ angles in the compound is :
- (A) three (B) four (C) five ~~(D) six~~



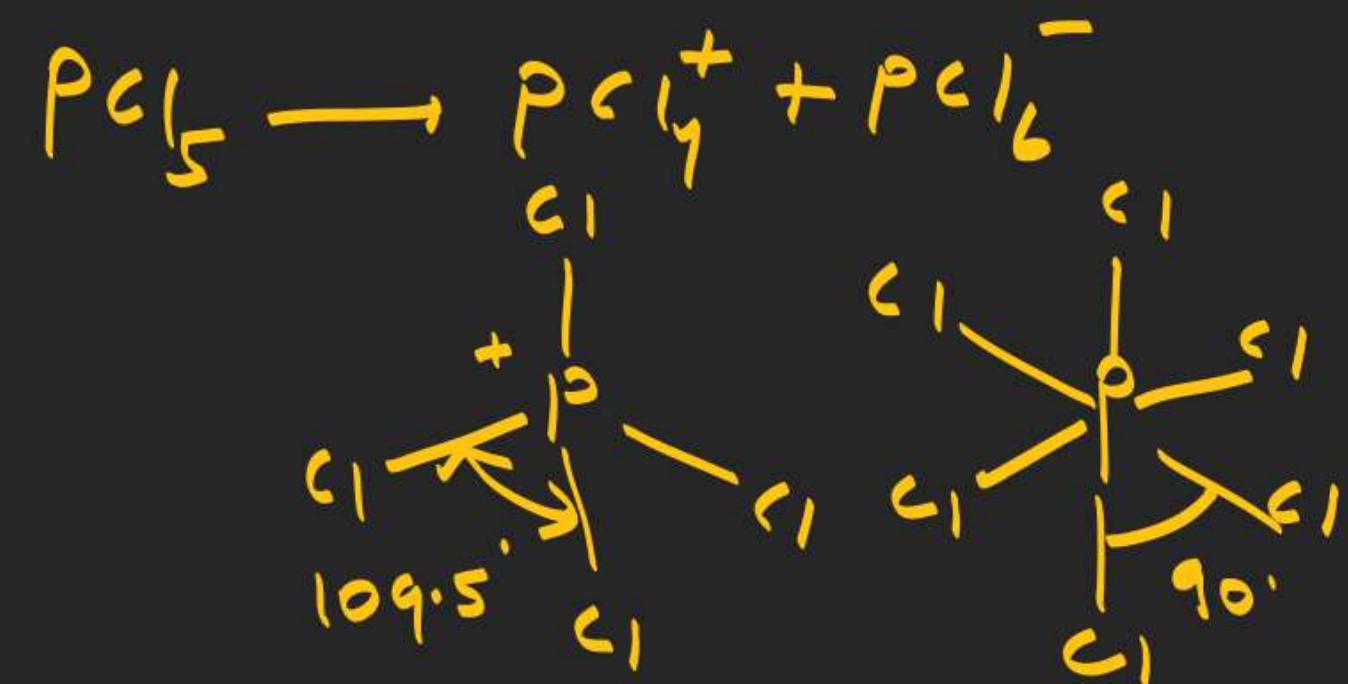
Chemical bonding

105. The number of non-axial set of 'd' orbital participate in the hybridisation of the anionic part of PCl_5
- (A) 1 (B) 2 (C) 3 ~~(D) 0~~



Chemical bonding

106. The (Cl – P – Cl) adjacent angle difference in cationic part and anionic part in $\text{PCl}_5(\text{s})$ is :
- (A) 60 (B) 90 ~~(C) 19.5~~ (D) 10.5



$$109.5 - 90 =$$

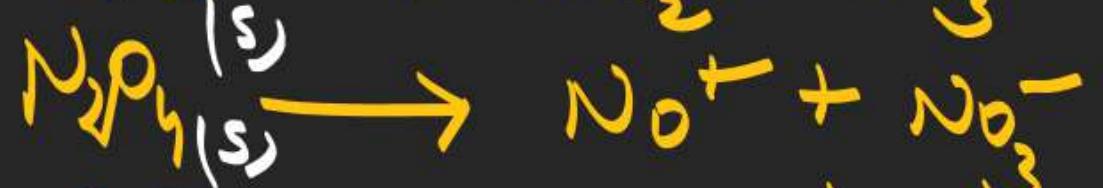
Chemical bonding

107. Hybridisation of cationic part of $\text{Cl}_2\text{O}_6(\text{s})$ is -

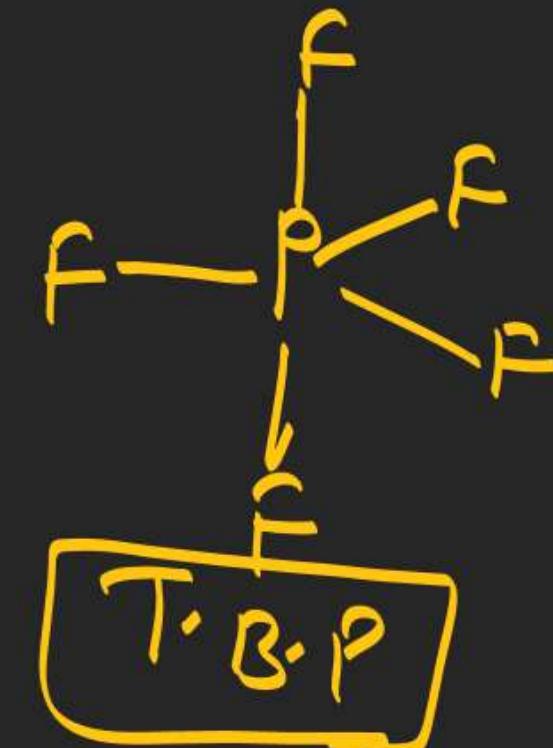
- (A) sp^2 (B) sp^3 (C) $\text{sp}^3 \text{ d}$ (D) $\text{sp}^3 \text{ d}^2$



Solid State Hyb.



all state
 $\text{PF}_5 \rightarrow \text{gas} \mid \text{liq} \mid \text{solid}$



Chemical bonding

108. Ratio of σ/π present in the XeO_3 will be

(A) 1: 4

(B) 1: 2

~~(C) 1: 1~~

(D) 2: 1

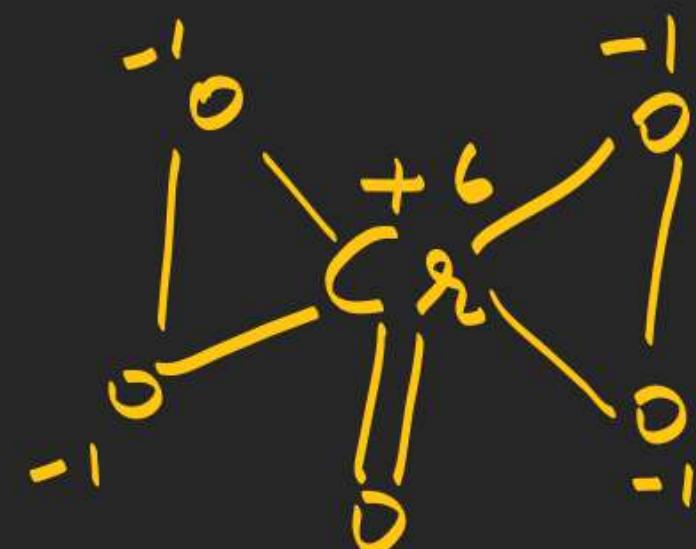


$$\frac{3}{3} = 1$$

Chemical bonding

109. Oxidation state of Cr in CrO_5 is -

- (A) +10 (B) +8 ~~(C) +6~~ (D) +5



Butterfly
Blue colour

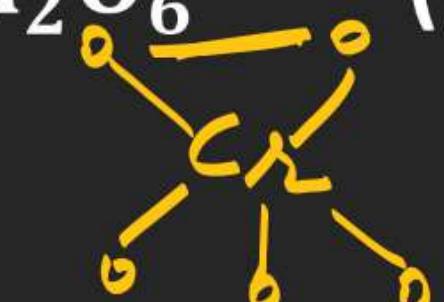
Chemical bonding

110. Which of the following compound has peroxy linkage present in its structure ?

(A) K_3CrO_8

$$3 + x + 8(-2) = 0$$

(B) Cl_2O_6



(C) N_2O_5

(D) $H_2S_2O_7$

$$\rho = -3 \text{ to } +5$$

oxidation state
out of Range $O^{+1} O^0 O^- O^{+1}$
then peroxy linkage.

$x =$

$Cr = 3d^5 ns^1$

Maximum O.S = ± 5

Oxidation State Range = $(n-8)$ to n

$n = \text{number of valence } e^-$

$S = -2 \text{ to } +6$

$Cl = -1 \text{ to } +7$

Chemical bonding

111. Which of the following species have maximum $p\pi - p\pi$ bonds?

- (A) P₄ S₁₀ (B) HCO₃⁻ (C) S₃O₉ (D) P₄O₁₀

this has only
2nd period element

so it has $p\pi - p\pi$ bond

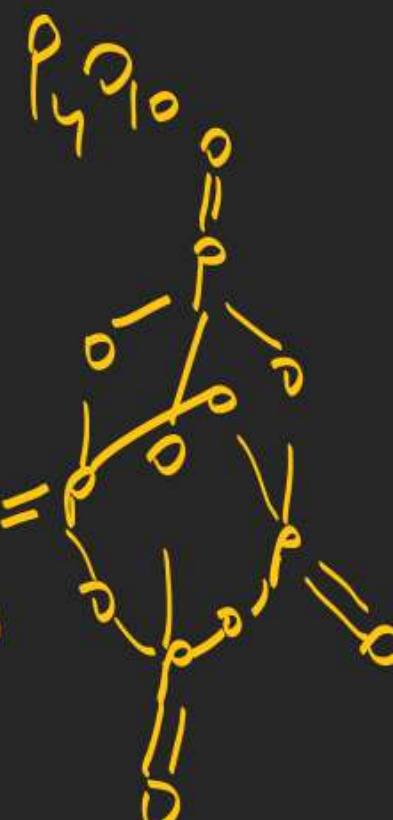
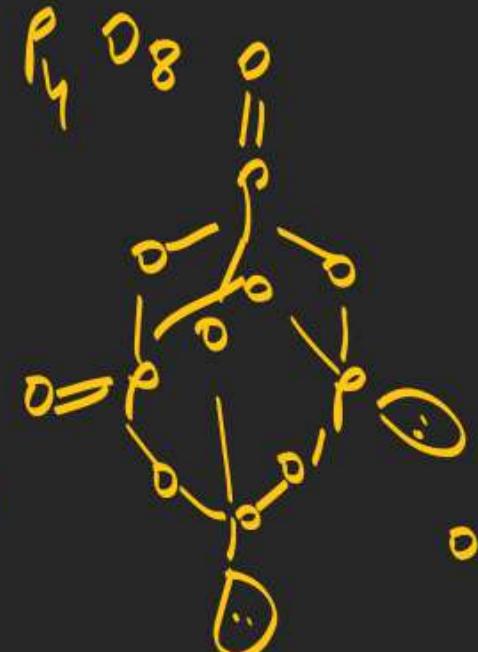
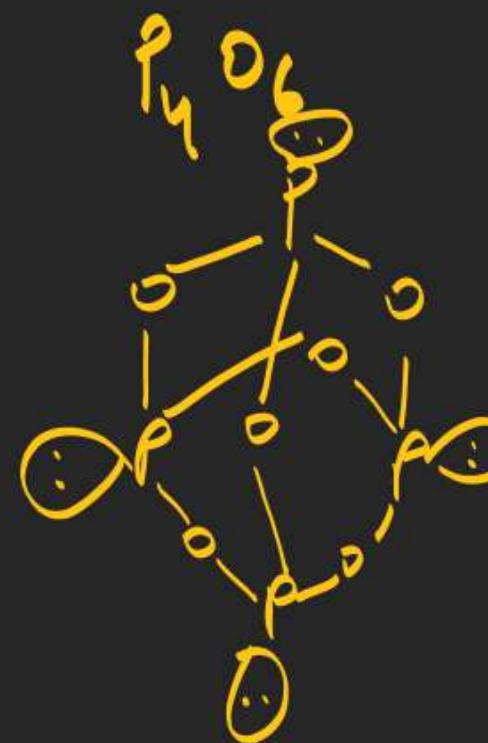
other molecule are 3rd period element

do they have $d\pi - p\pi$ bond.

Chemical bonding

112. Find the correct statement about P_4O_8 :

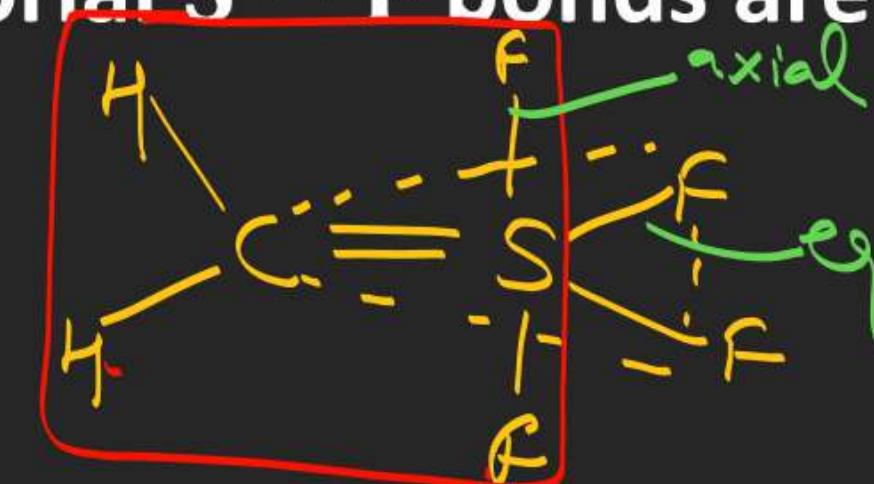
- (A) molecule does not exist
- (B) five $P - O - P$ linkage
- (C) four $P = O$ bonds present in it's structure
- (D) Six $P - O - P$ linkage



Chemical bonding

113. In the structure of H_2CSF_4 , which of the following statement is incorrect?

- (A) Two C – H bonds are in the same plane of axial S – F bonds.
- (B) Two C – H bonds are in the same plane of equitorial S – F bonds.
- (C) Total Six atoms are in the same plane.
- (D) Equitorial S – F bonds are Perpendicular to nodal plane of π bond.



Chemical bonding

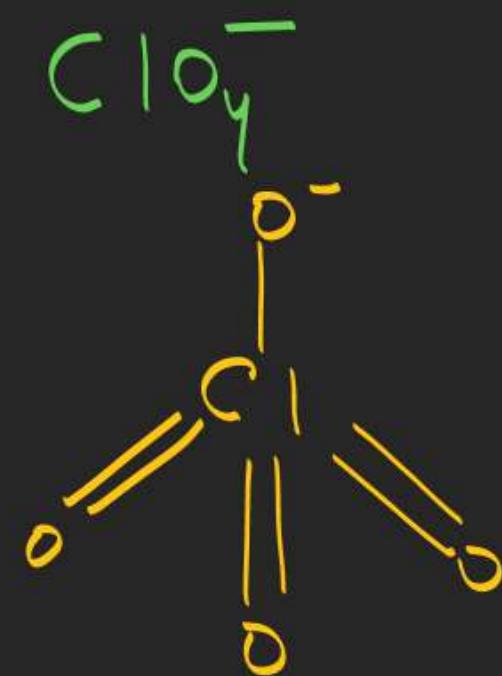
114. Total number of resonating structure possible of the molecule ClO_4^- is -

(A) 2

(B) 3

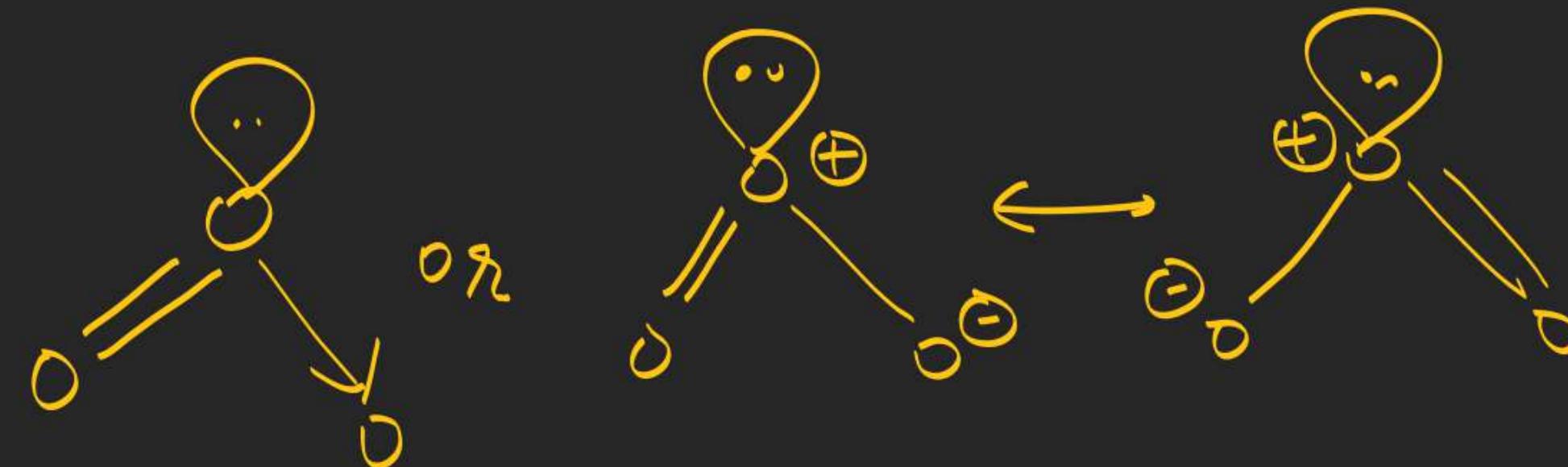
(C) 4

(D) 5



Chemical bonding

115. The formal charges on the three atoms in O_3 molecule are :
- (A) 0, 0, 0 (B) 0, 0, -1 (C) 0, 0, +1 ~~(D) 0, +1, -1~~



Chemical bonding

116. Minimum number of resonating structure possible in :-

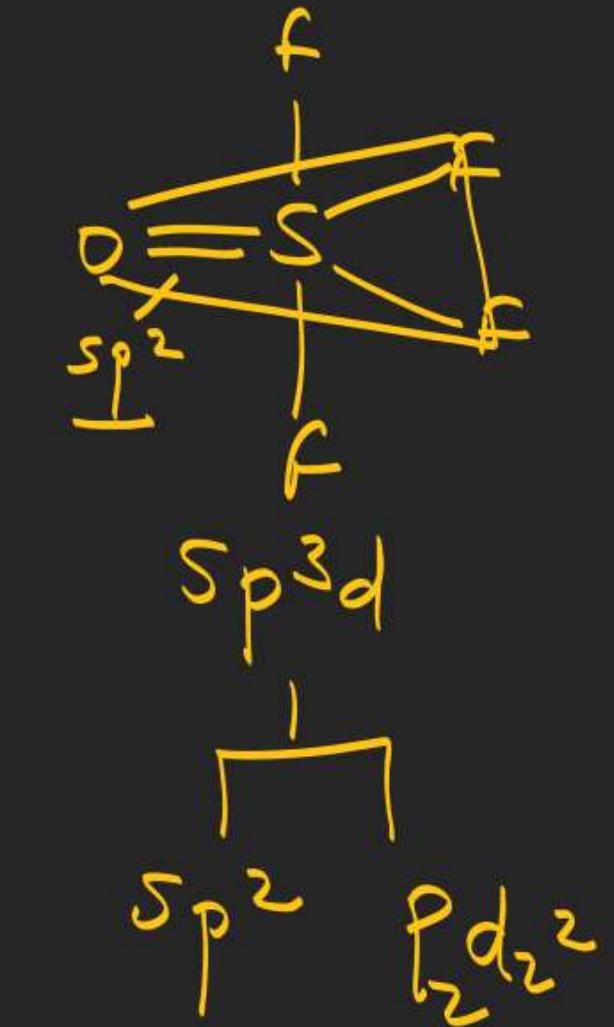
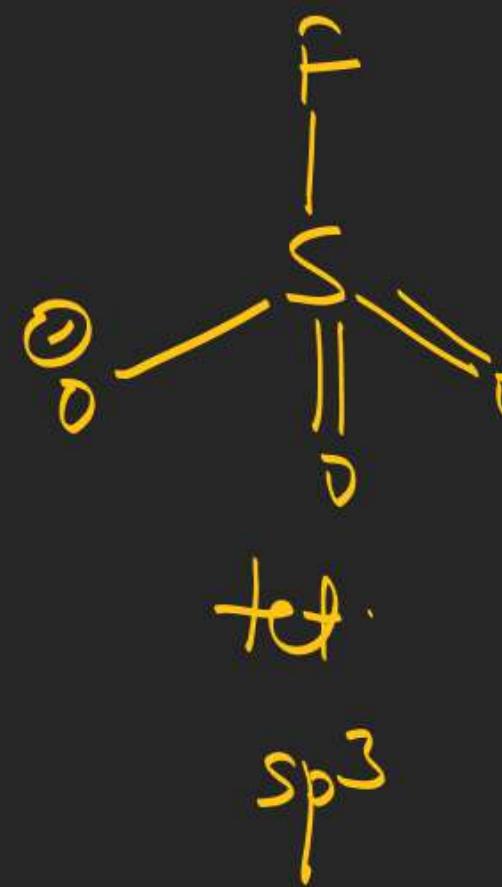
- (A) O_3 (B) NO_2^- (C) N_3^- ~~(D) $COCl_2$~~



Chemical bonding

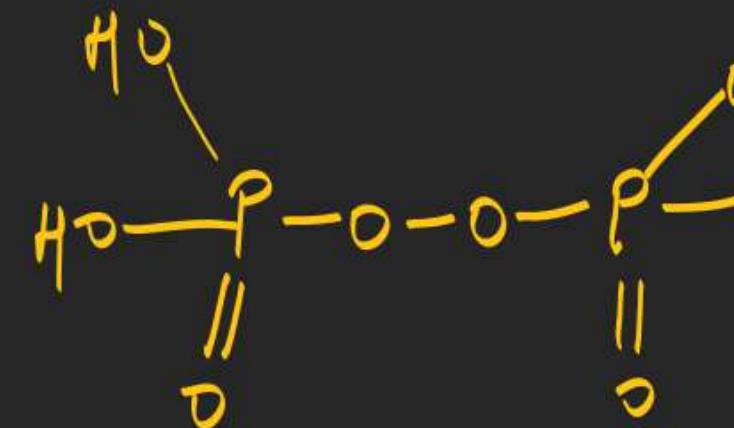
~~12th Class Question~~

117. ~~The compound having shortest S – O bond length ?~~
- (A) $\text{SO}_3 \text{F}^-$ (B) SO_4^{2-} ~~(C) SOF_4~~ (D) SOCl_2

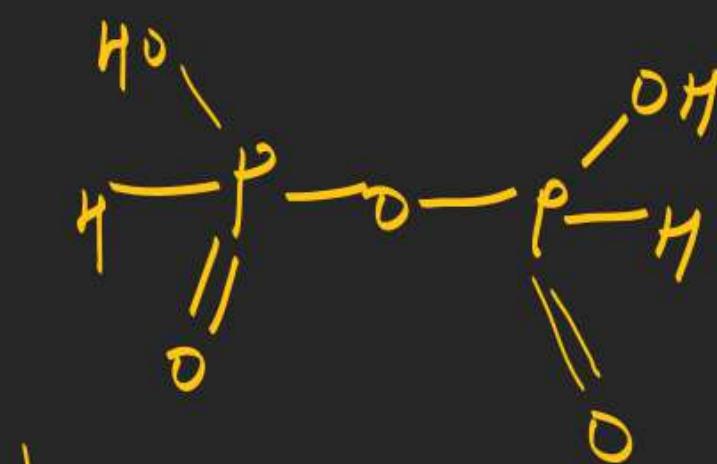
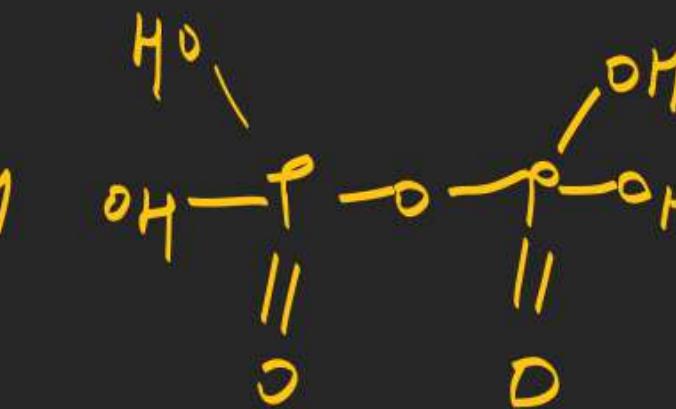


Chemical bonding

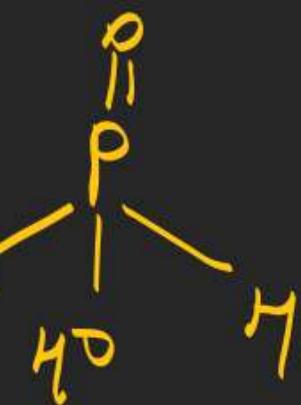
118. Which of the following acid have **highest number of P – H bonds**
:-



basicity & number of
group



number
of P-H bond = 2

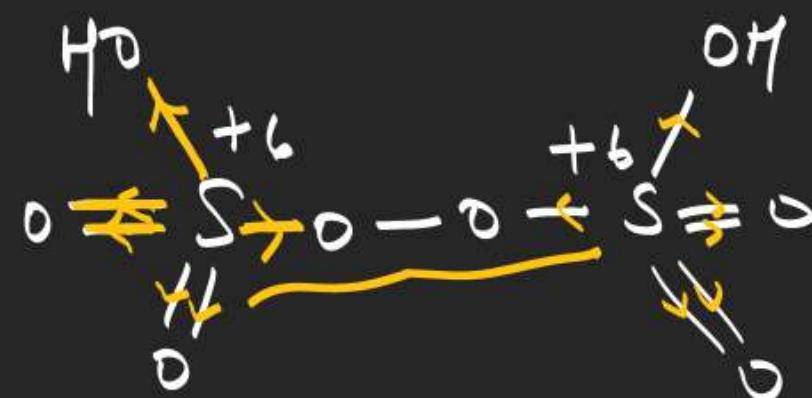


1

Chemical bonding

119. Oxidation state of S in $\text{H}_2\text{S}_2\text{O}_8$ is ?

- (A) +5, +5 (B) +6, +5 (C) +5, +6 (D) +6, +6



$$2 + 2x + 8(-2) = 0$$

$$x = \pm 5$$

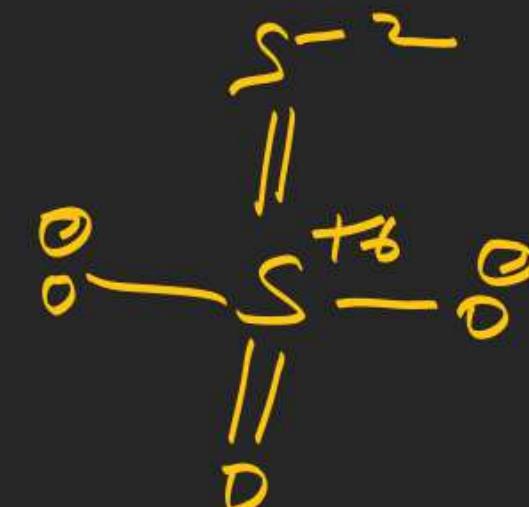
Ans

Chemical bonding

120. Which of the following oxy acid have sulphur atoms with different oxidation states?



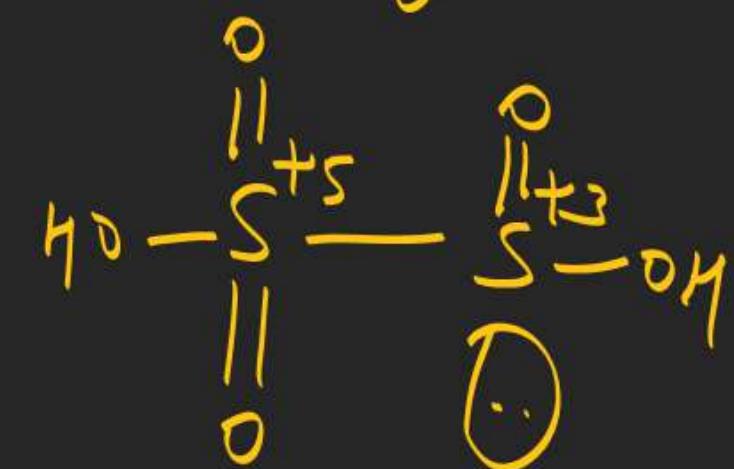
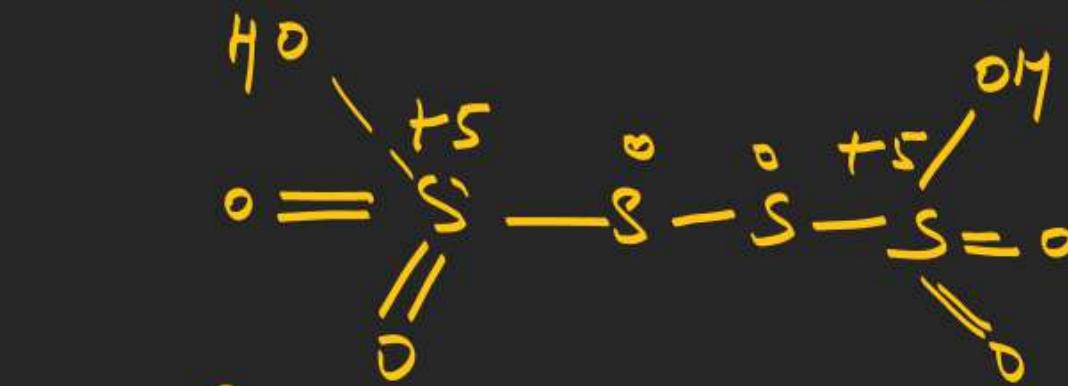
(D) All of these



$$\text{Oxid-Range} = (n-8) \text{ to } n$$

n = number of val-e⁻

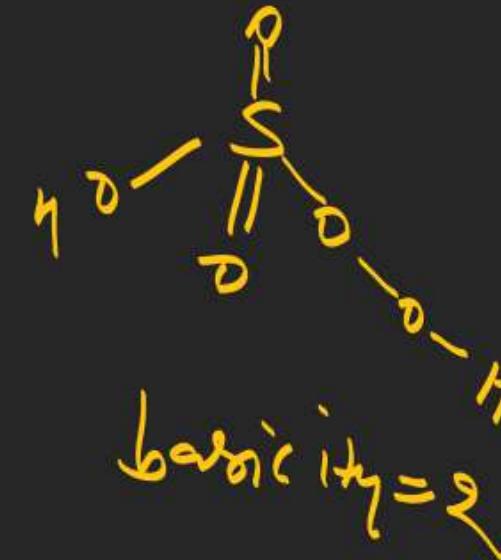
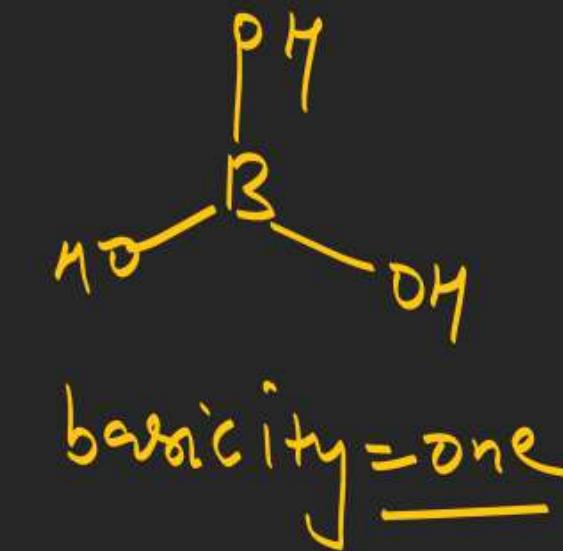
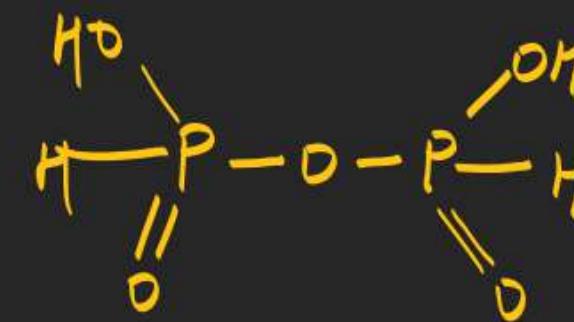
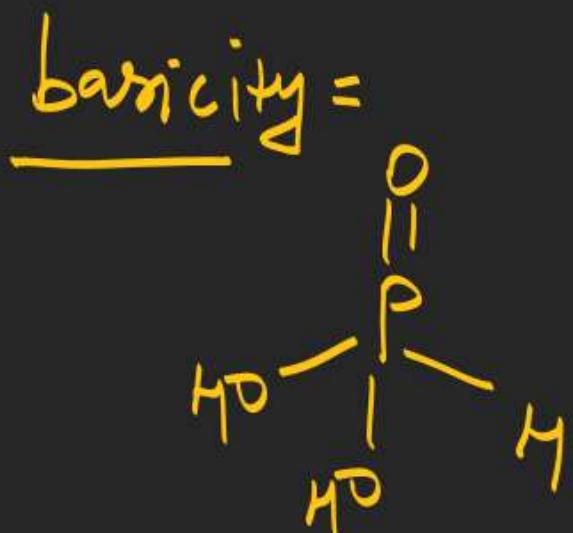
$$\text{S} = -2 \text{ to } +6$$



Chemical bonding

121. Which of the following compound has different value of basicity from the others ?

- (A) H_3PO_3 (B) $\text{H}_4\text{P}_2\text{O}_5$ ~~(C) H_3BO_3~~ (D) H_2SO_5



basicity = 2

Chemical bonding

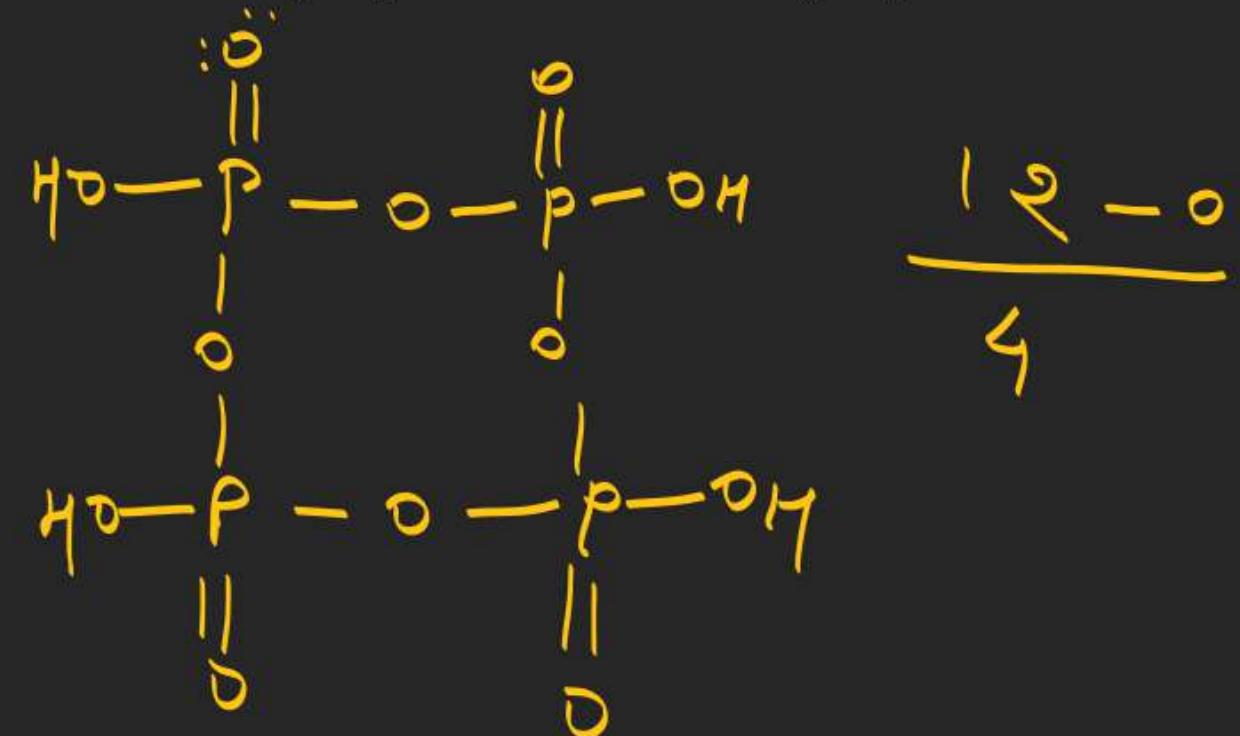
122. Which of the following acid have highest number of P – H bonds

:



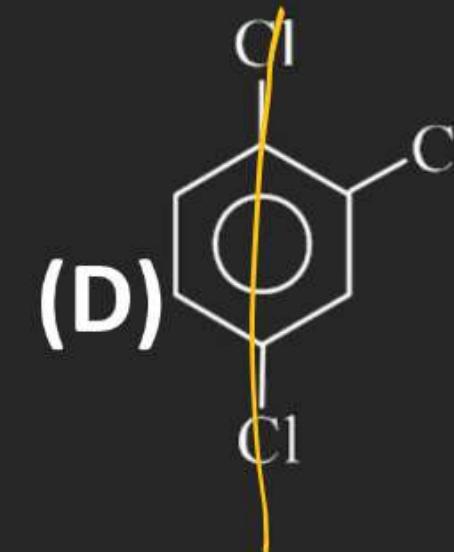
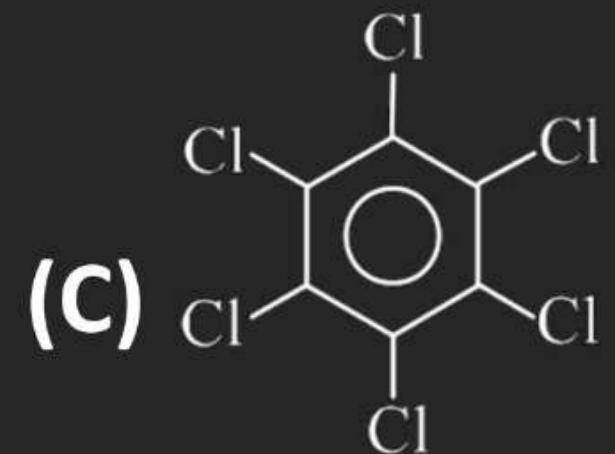
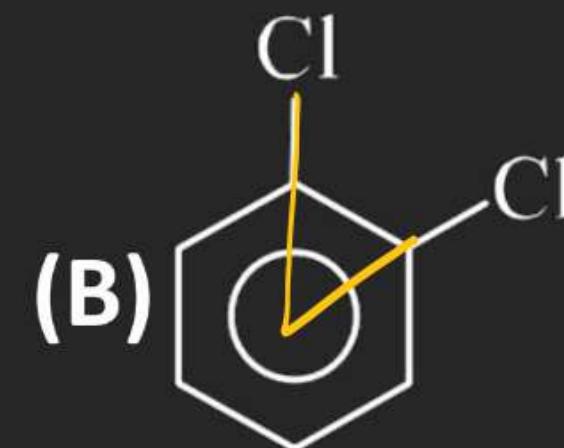
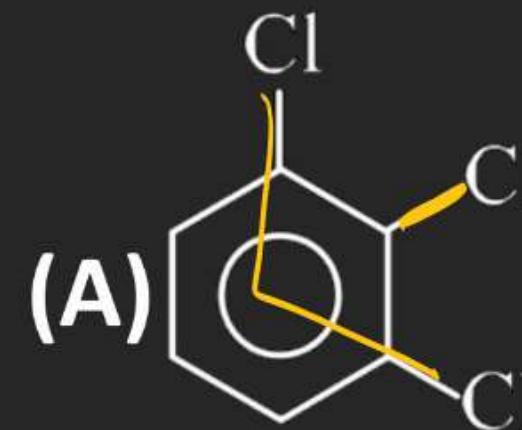
Chemical bonding

123. Find the value of $\frac{a-b}{c}$ if; a is the total number of sp^3 hybridised atoms, b is total $p_{\pi} - p_{\pi}$ bonds and c is the total sp^2 hybridised atoms in the structure of $H_4P_4O_{12}$
- (A) 2 (B) 1 ~~(C) 3~~ (D) 4

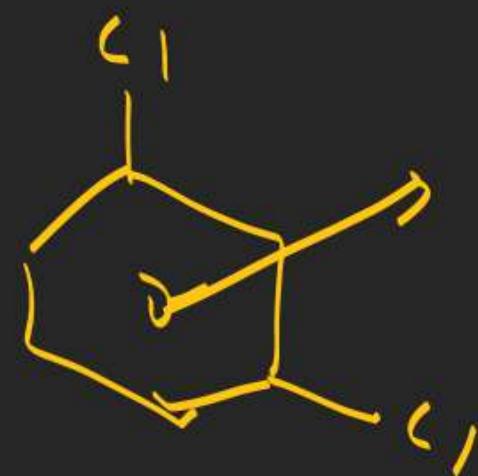


Chemical bonding

124. Which of the following have maximum dipole moment?

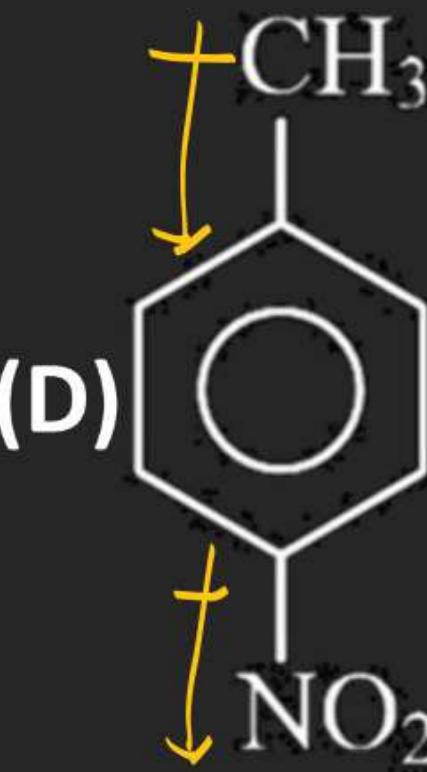
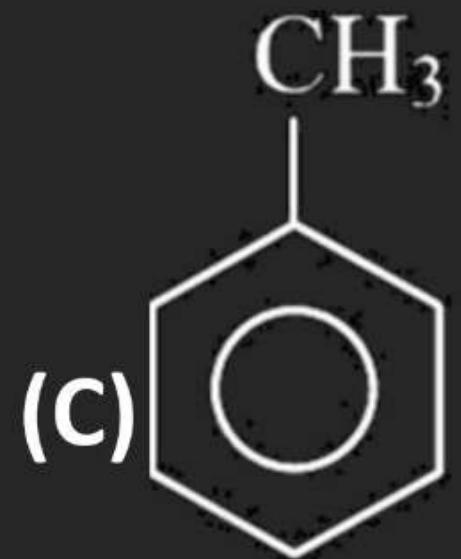
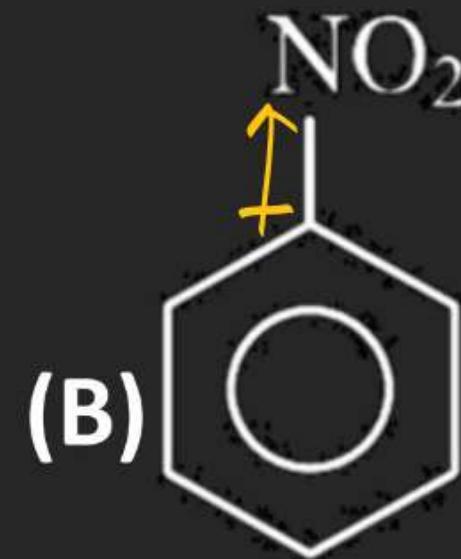


$$\underline{\mu = 0}$$



Chemical bonding

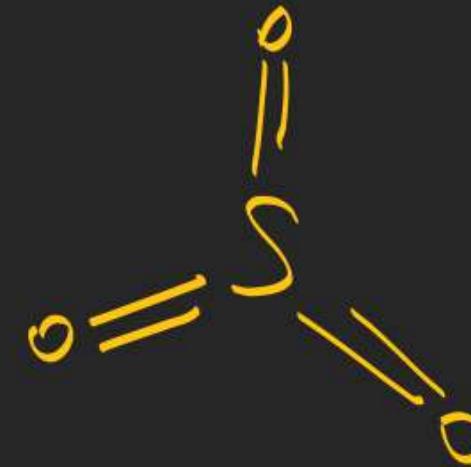
125. Which of the following is most polar in nature ?



Chemical bonding

126. Which of the following molecule has permanent dipole moment:

(A) SO_3



(B) SO_2



(C) CO_2



(D) BF_3



Chemical bonding

127. The correct sequence of polarity of the following molecule :

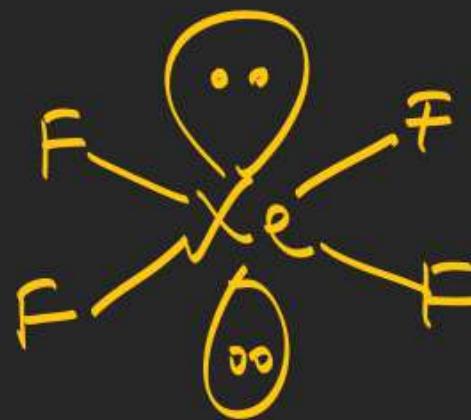
I. XeF_4

II. XeF_2

III. XeF_5^-

IV. XeO_3

(P stands for polar and NP stands for non-polar)



$\mu = 0$
nonpolar

(A)

P

NP

NP

P

(B)

NP

NP

NP

P

(C)

NP

P

NP

P

(D)

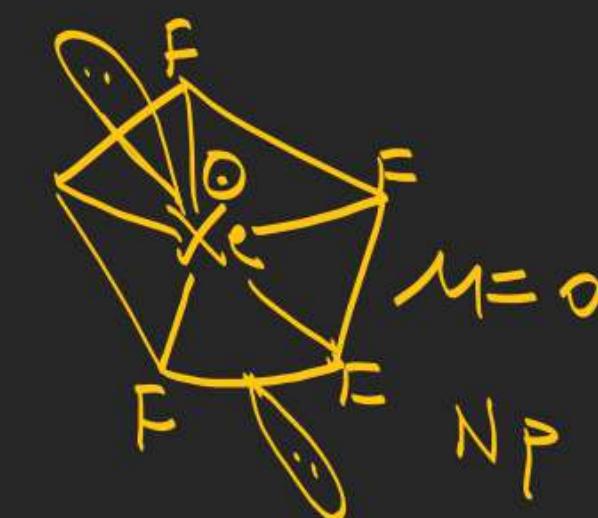
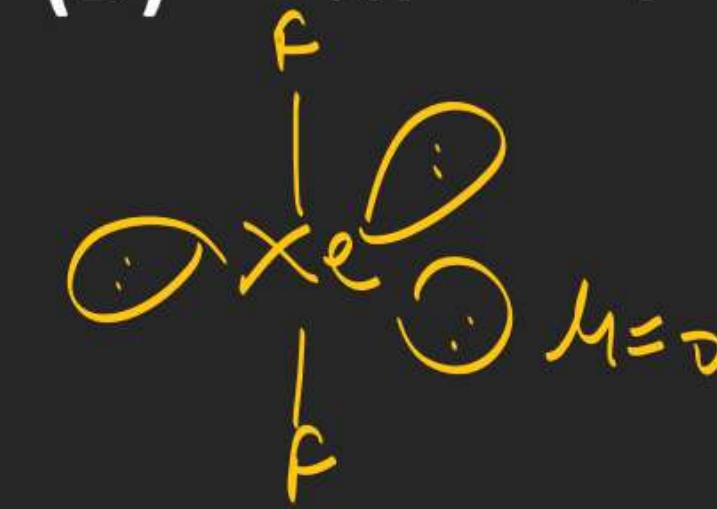
NP

P

P

NP

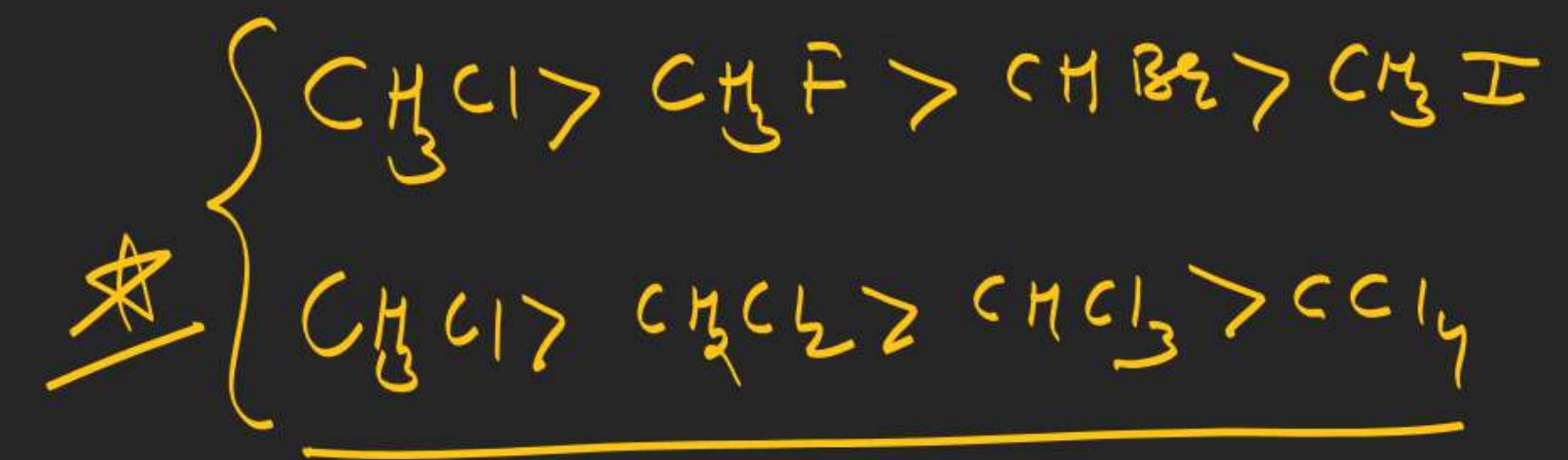
I II III IV



Chemical bonding

128. Which of the following is most polar in nature?

- (A) CH_2Cl_2 (B) CHCl_3 (C) CH_3Cl (D) CH_3F

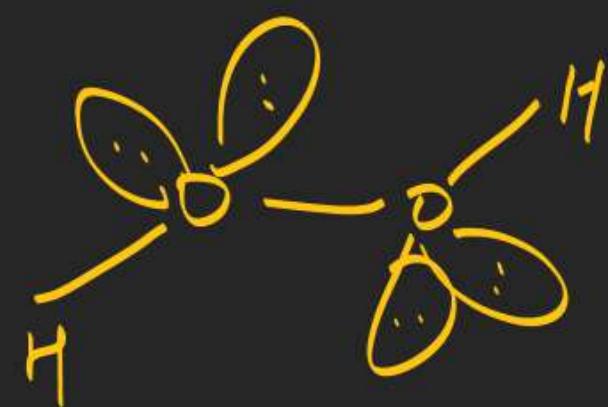


Chemical bonding

129. Total number of polar species among the following will be ?

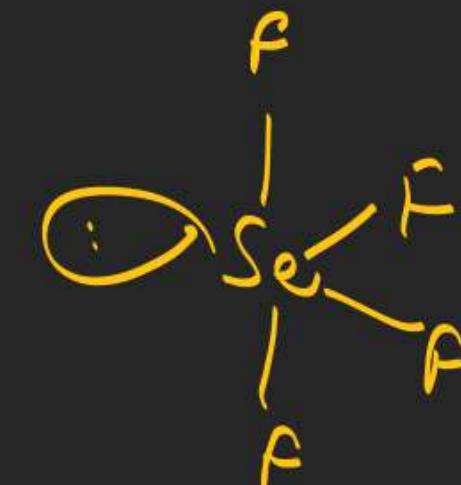


(A) 2

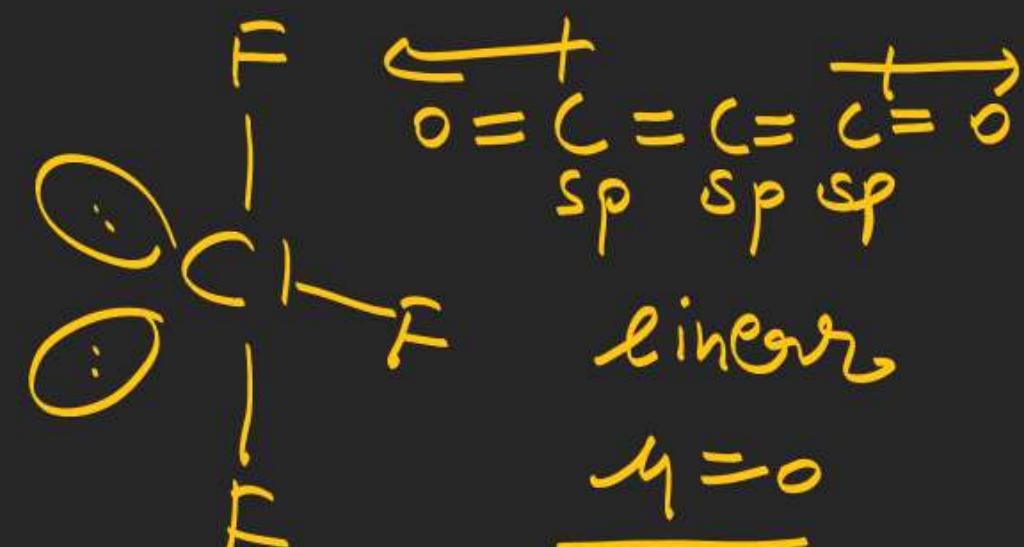


$\mu \neq 0$
Polar

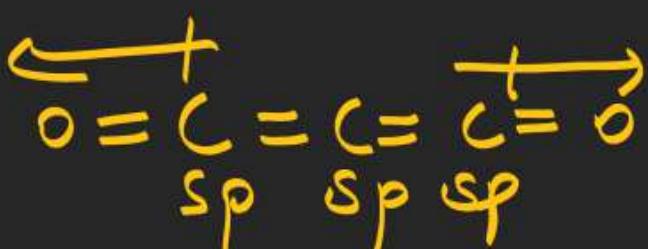
(B) 4



(C) 5

 $\mu \neq 0$

(D) 3



linear

 $\underline{\mu = 0}$

nonpolar