

## Chemical bonding

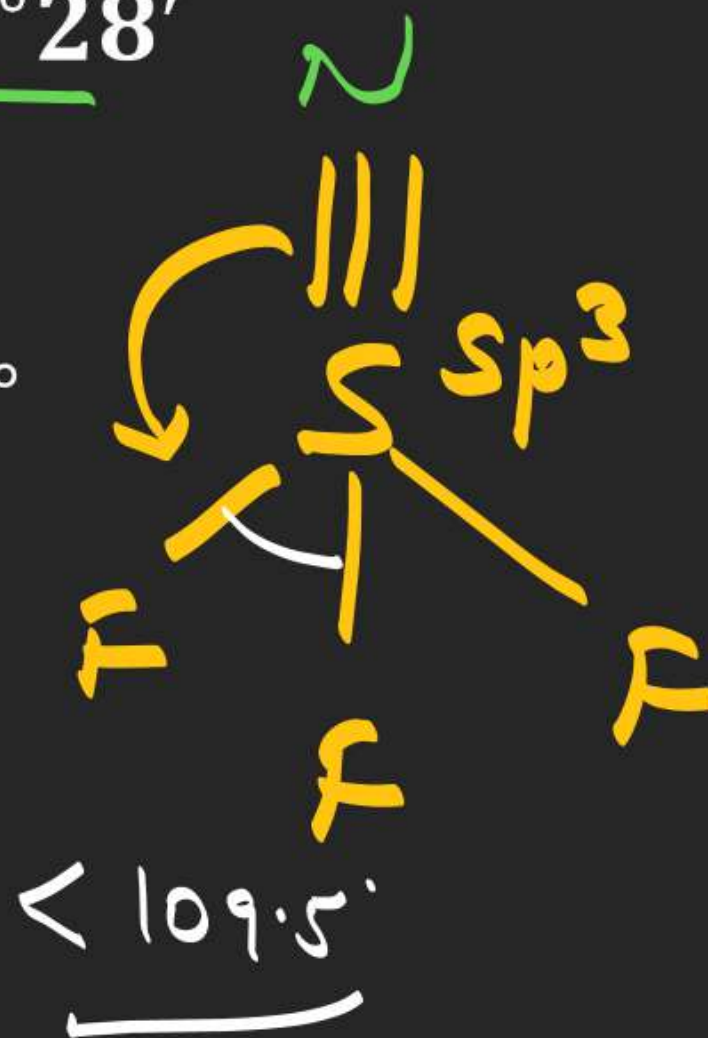
101. In  $\text{SNF}_3$  the  $\angle \text{FSF}$  should be :

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

✓ (B) less than  $109^\circ 28'$

(C) less than  $180^\circ$  and more than  $120^\circ$

(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

$$l_p - l_p > l_p - b_p > b_p - b_p$$

(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

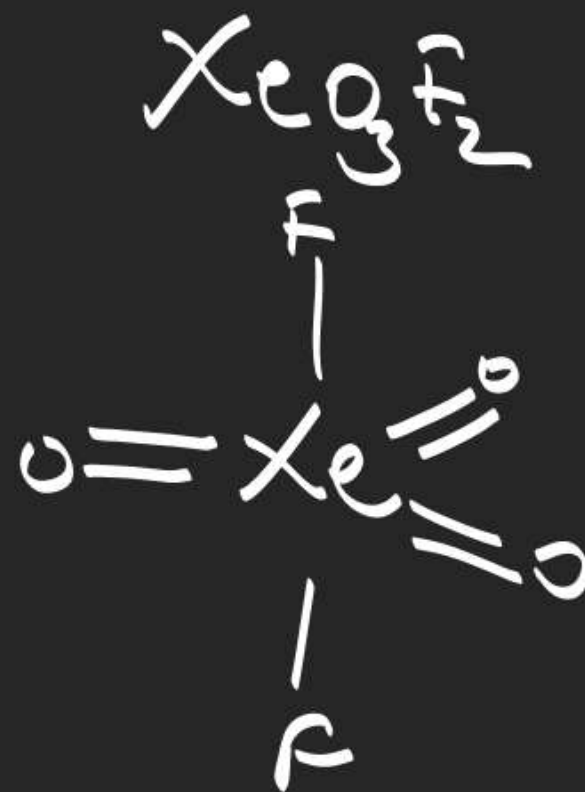
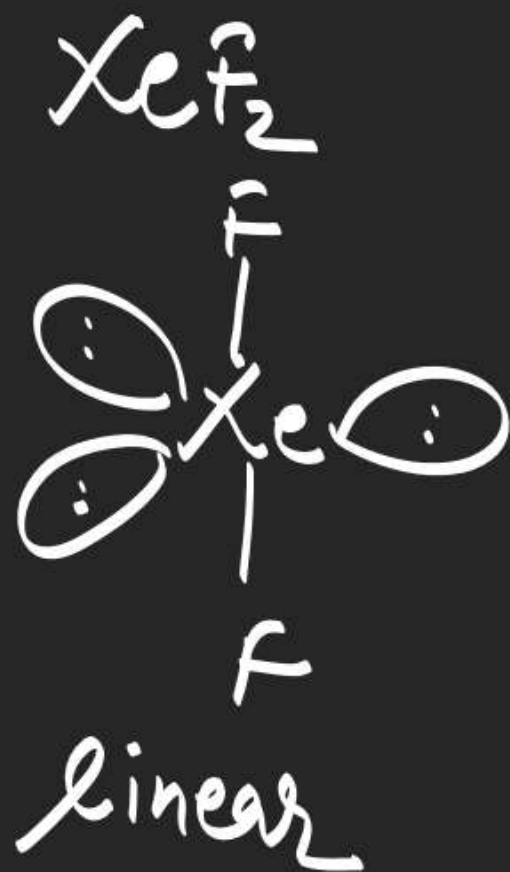
(IV) The structures of xenon fluorides and xenon oxyfluorides could not be explained on the basis of VSEPR theory

(A) T T T F

(B) T F T F

(C) T F T T

(D) T F F F





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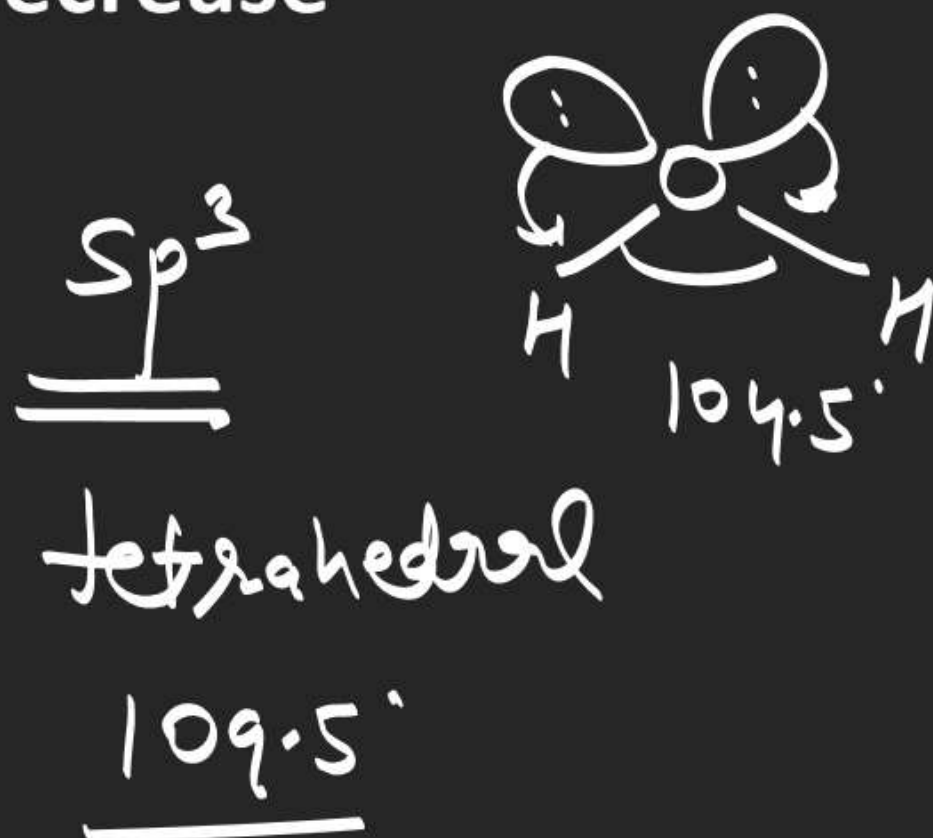
103. The H — C — H bond angle in  $\text{CH}_4$  is  $109.5^\circ$ , due to lone pair repulsion, the H — O — H angle in  $\text{H}_2\text{O}$  will

(A) remain the same

(B) increase

☒ (C) decrease

(D) become  $180^\circ$



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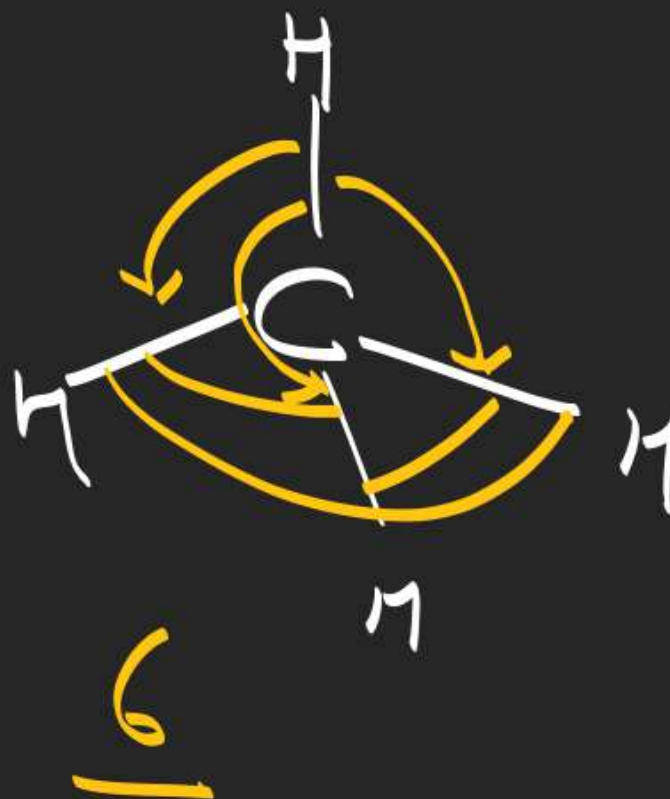
104. The compound  $\text{MX}_4$  is tetrahedral. The number of  $\angle \text{XMX}$  angles in the compound is :

(A) three

(B) four

(C) five

~~(D) six~~



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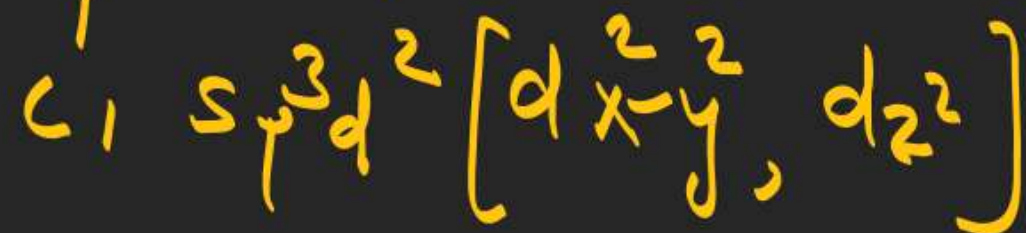
105. The number of non-axial set of 'd' orbital participate in the hybridisation of the anionic part of  $\text{PCl}_5$

(A) 1

(B) 2

(C) 3

~~(D) 0~~





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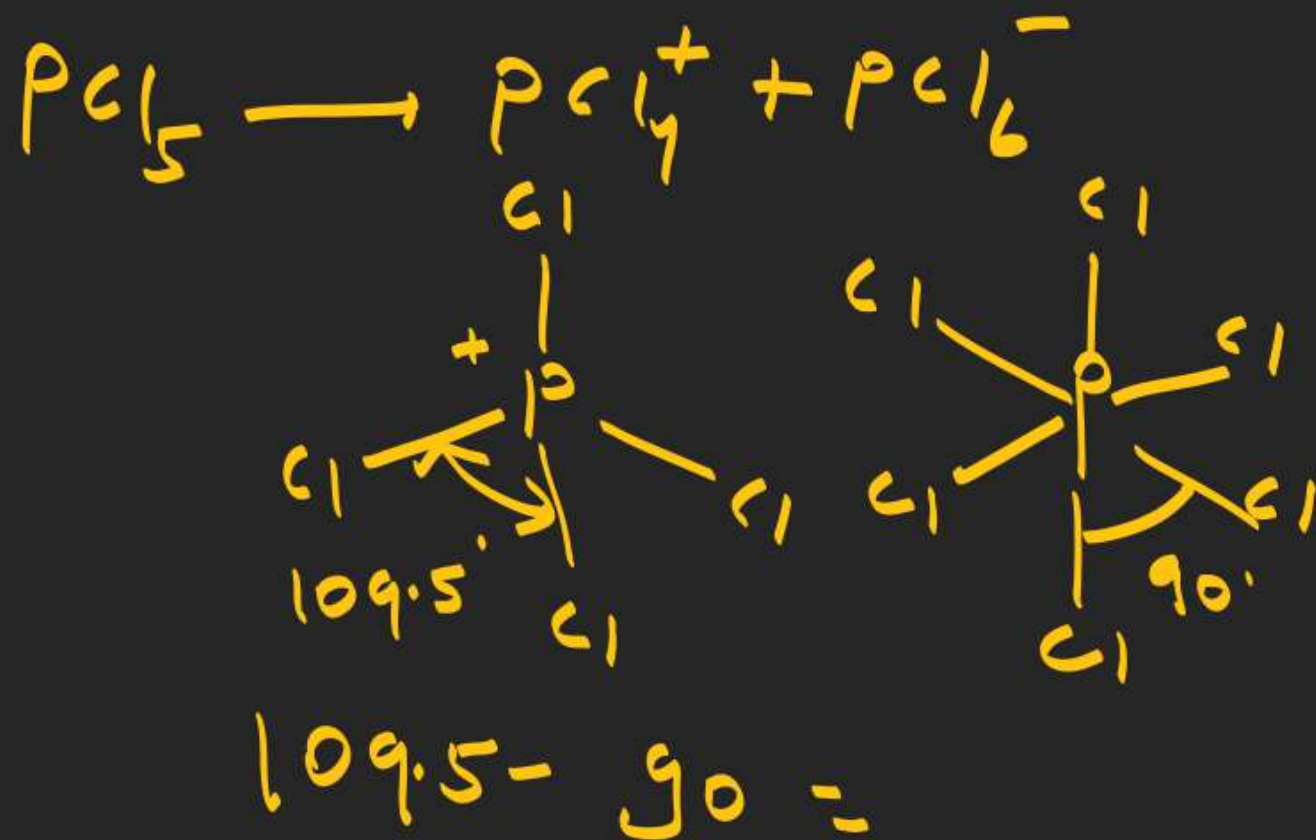
106. The (Cl — P — Cl) adjacent angle difference in cationic part and anionic part in  $\text{PCl}_5(\text{s})$  is :

(A) 60

(B) 90

✓ (C) 19.5

(D) 10.5



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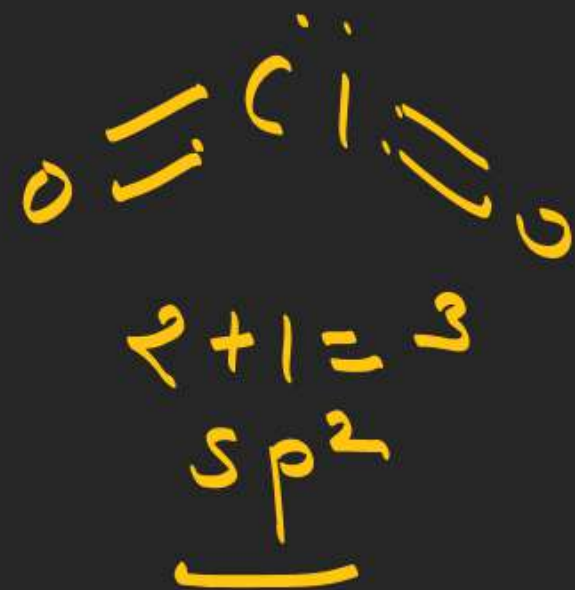
107. Hybridisation of cationic part of  $\text{Cl}_2\text{O}_6(\text{s})$  is -

(A)  $\text{sp}^2$

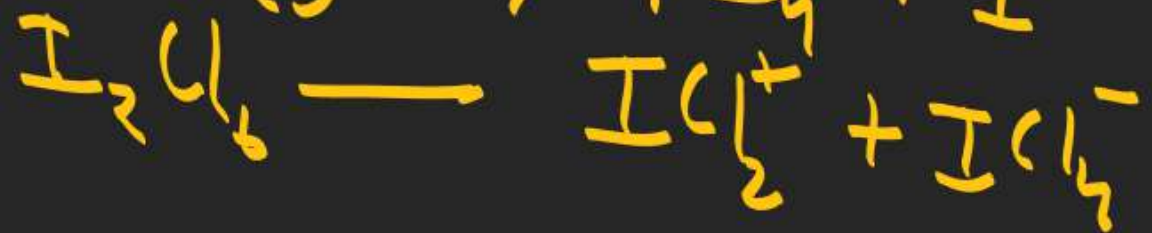
(B)  $\text{sp}^3$

(C)  $\text{sp}^3 \text{d}$

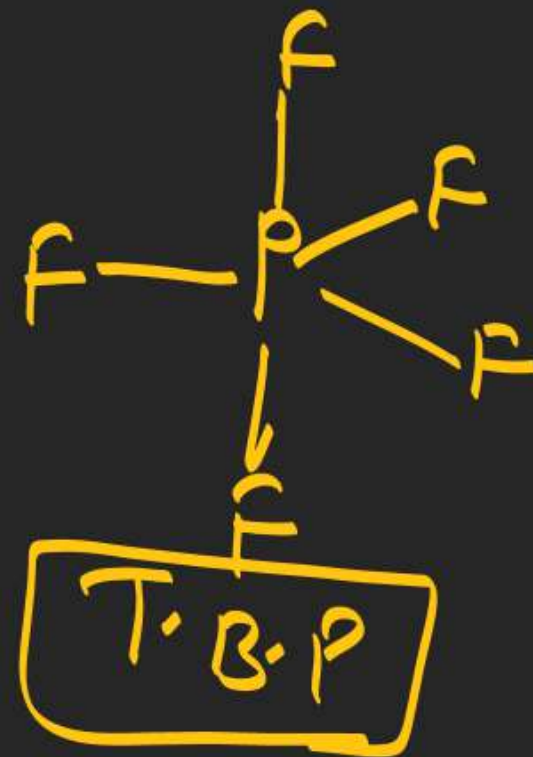
(D)  $\text{sp}^3 \text{d}^2$





Solid state hyb.

all state



T.B.P

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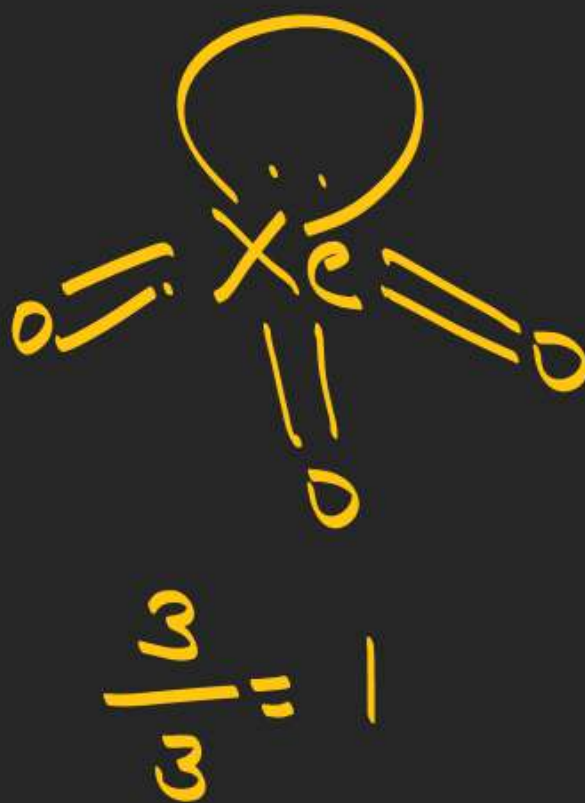
108. Ratio of  $\sigma/\pi$  present in the  $\text{XeO}_3$  will be

(A) 1:4

(B) 1:2

~~(C) 1:1~~

(D) 2:1



## Chemical bonding

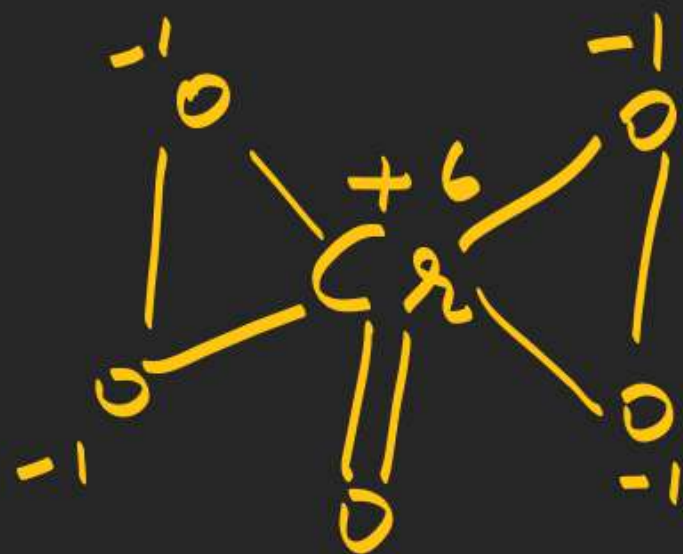
109. Oxidation state of Cr in  $\text{CrO}_5$  is -

(A) +10

(B) +8

✓ (C) +6

(D) +5



Butterfly

Blue colour



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



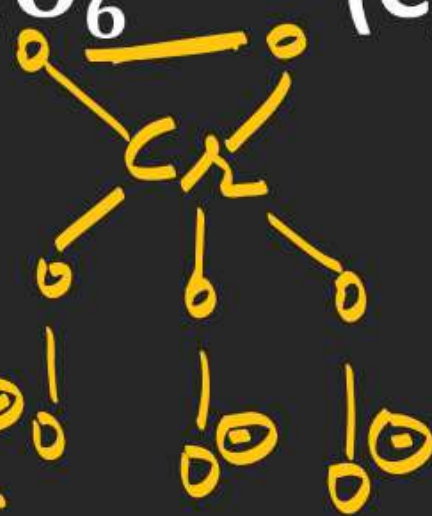
$$3 + x + 8(-2) = 0$$

oxidation state

out of Range

then peroxy linkage.

$$x =$$



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



Maximum O.S. = +6

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



↓  
this has only  
2<sup>nd</sup> period element

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

other molecules are 3<sup>rd</sup> period element

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



# Chemical bonding

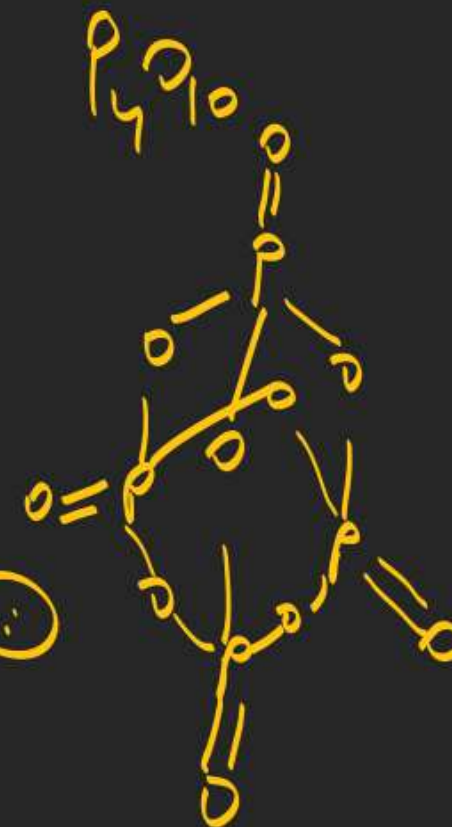
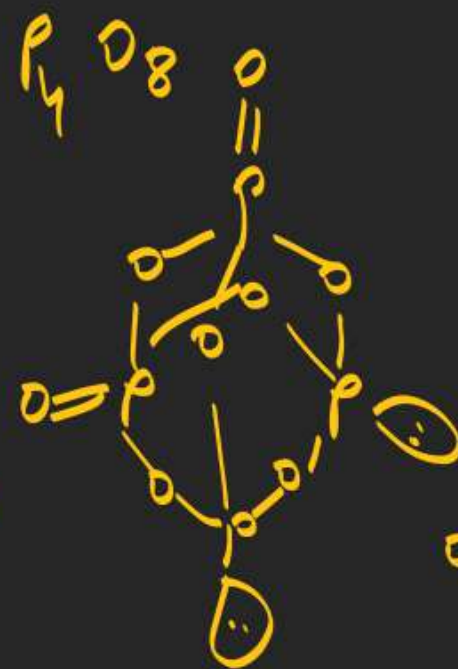
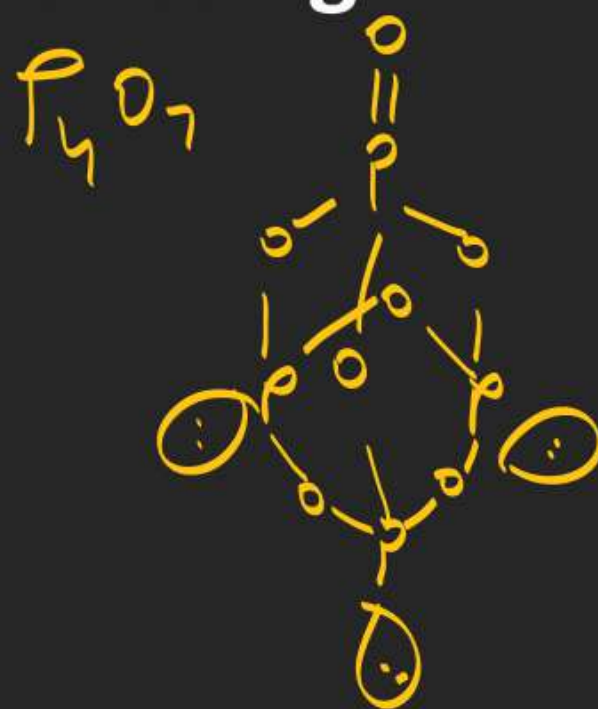
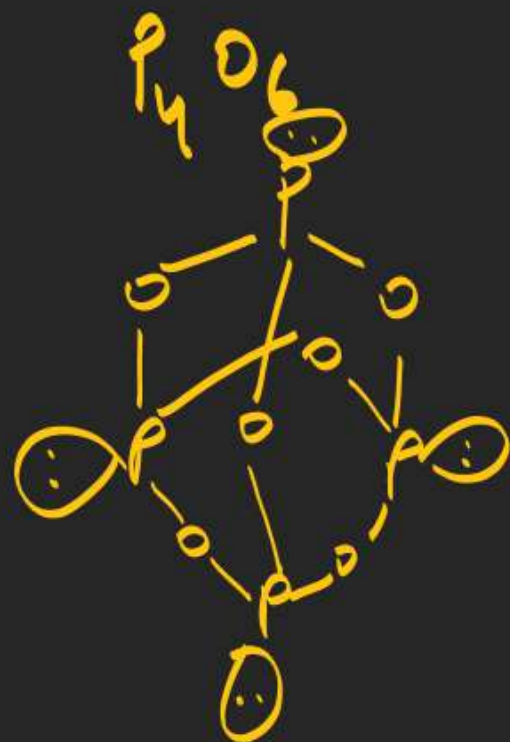
112. Find the correct statement about  $P_4O_8$  :

(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

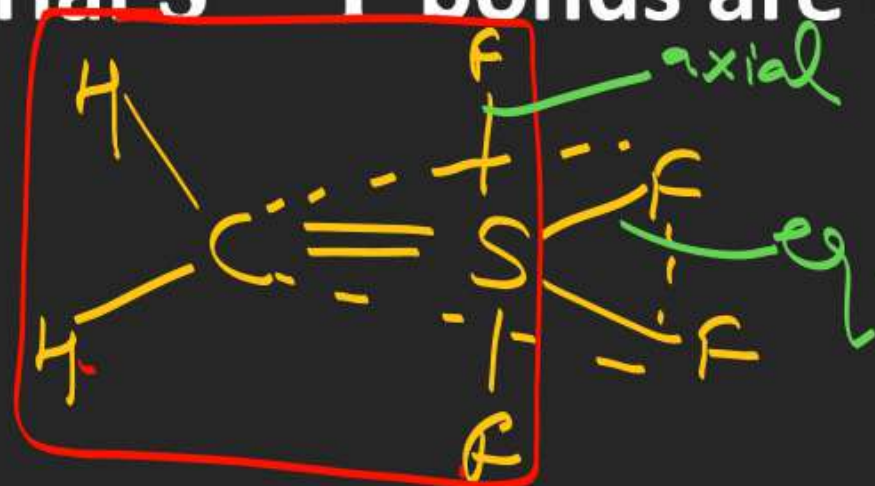




# Chemical bonding

113. In the structure of  $\text{H}_2\text{CSF}_4$ , 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 equatorial S — F bonds.
- (C) Total Six atoms are in the same plane.
- (D) Equatorial S — F bonds are Perpendicular to nodal plane of  $\pi$  bond.



# Chemical bonding

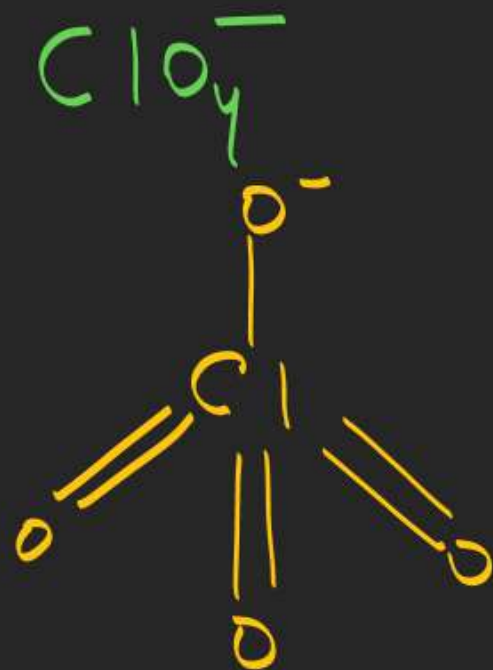
114. Total number of resonating structure possible of the molecule  $\text{ClO}_4^-$  is -

(A) 2

(B) 3

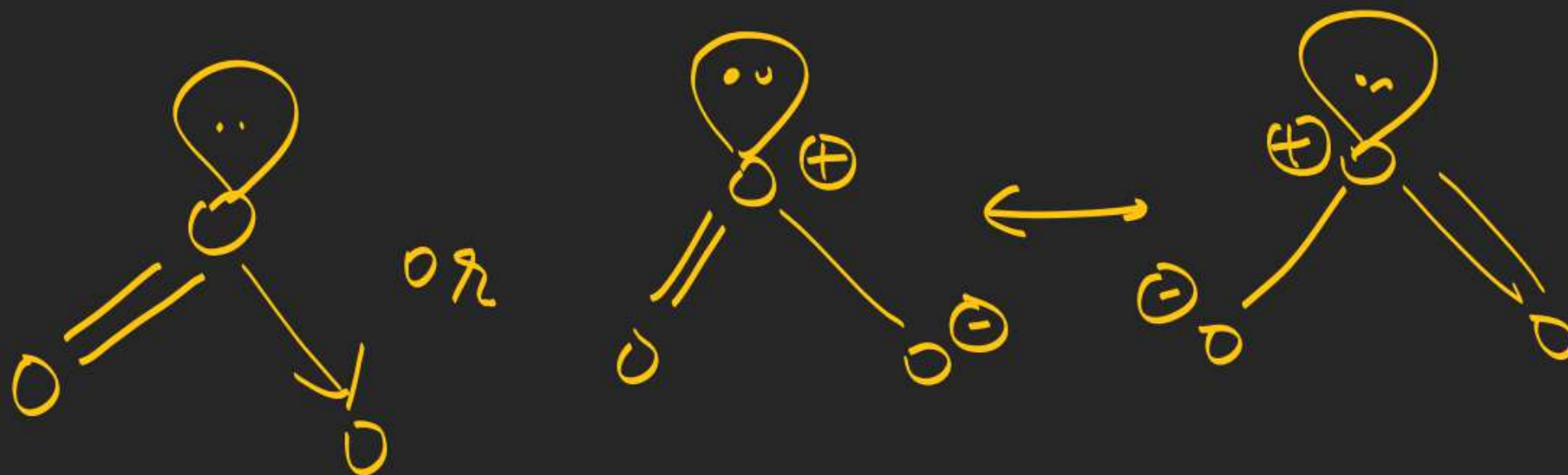
~~(C) 4~~

(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~~





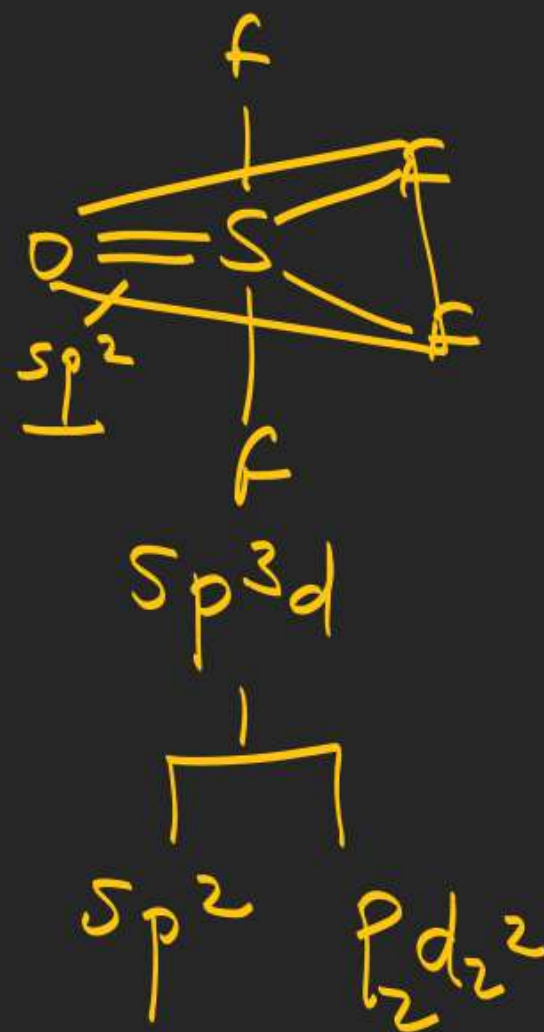
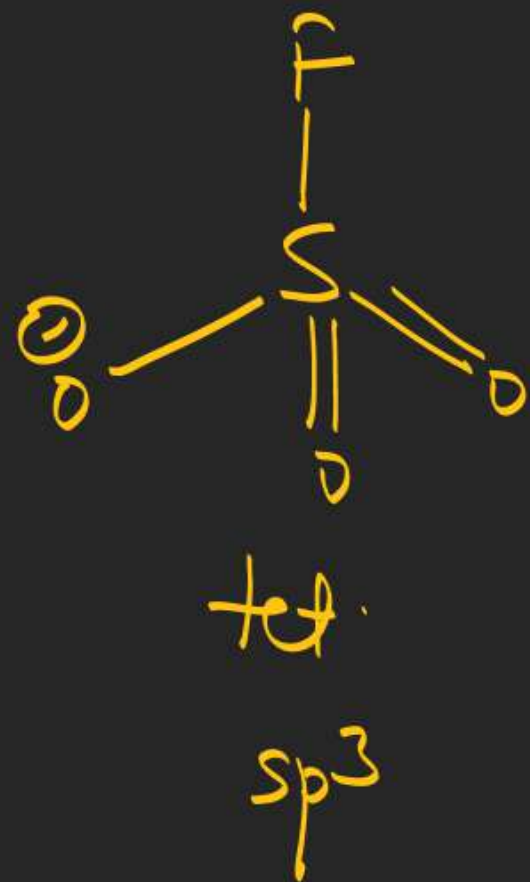
# Chemical bonding

116. Minimum number of resonating structure possible in :-



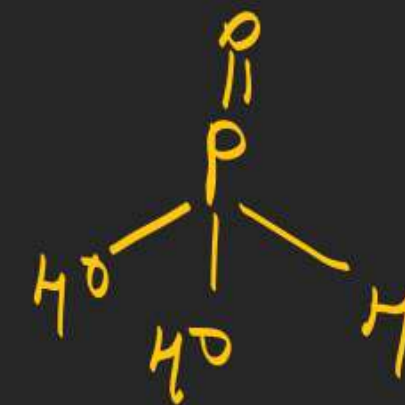
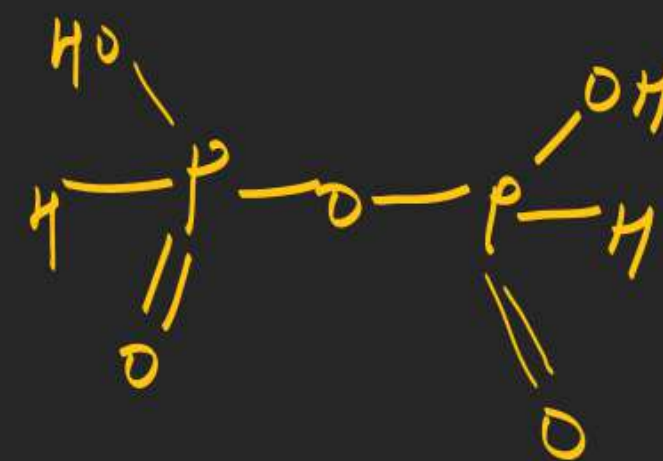
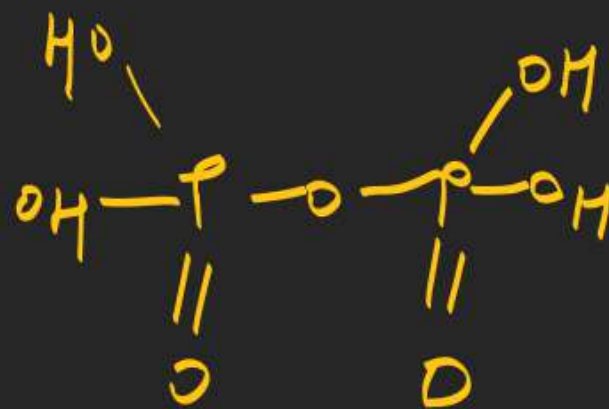
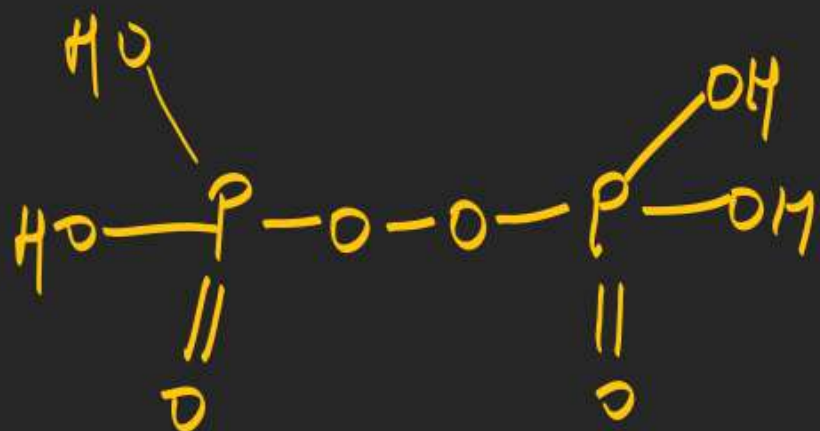
## Chemical bonding

117. 12<sup>th</sup> Class Question  
 The compound having shortest S — O bond length ?  
 (A)  $\text{SO}_3 \text{ F}^-$     (B)  $\text{SO}_4^{2-}$     (C)  $\text{SOF}_4$     (D)  $\text{SOCl}_2$



# Chemical bonding

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



basicity & number of OH group

number of P-H bond = 2

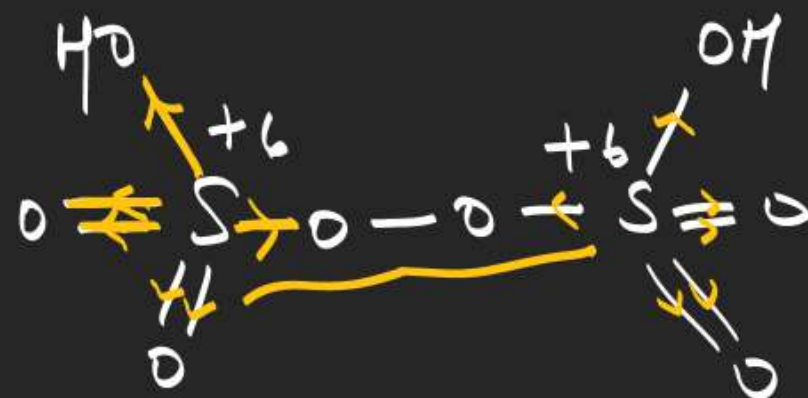
1



## 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



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

$$x = +7$$

but

# Chemical bonding

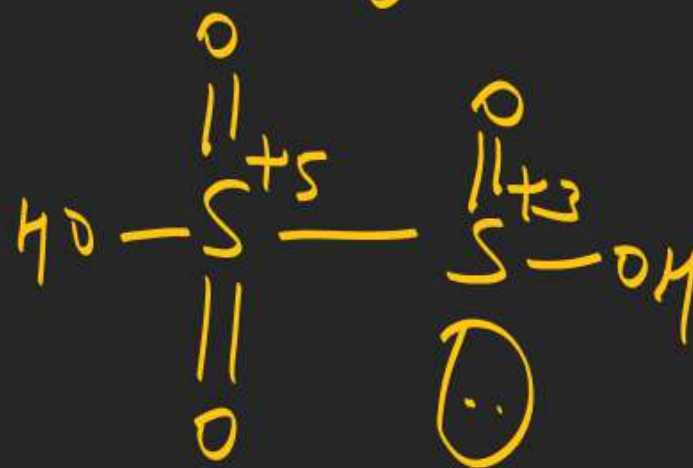
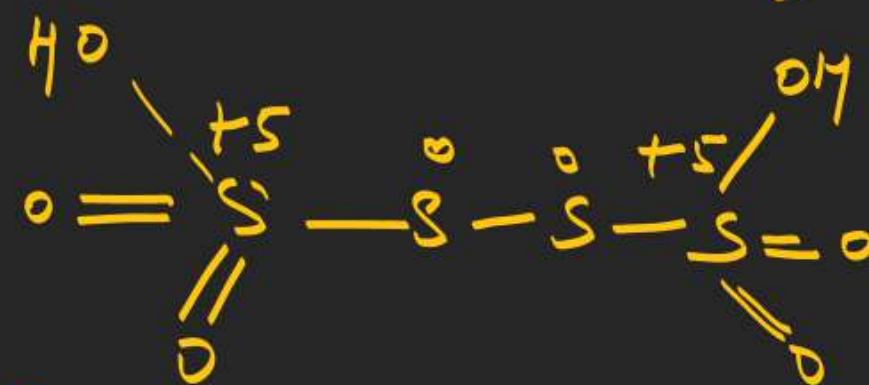
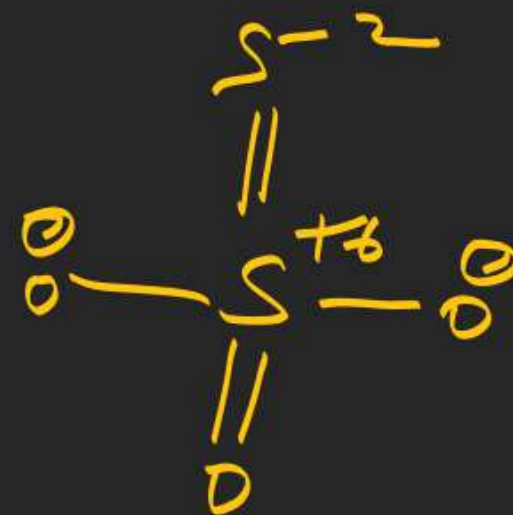
120. Which of the following oxy acid have sulphur atoms with different oxidation states?



(D) All of these

Oxid-Range =  $(n-8)$  to  $n$   
 $n$  = number of val- $e^-$

S = -2 to +6



## Chemical bonding

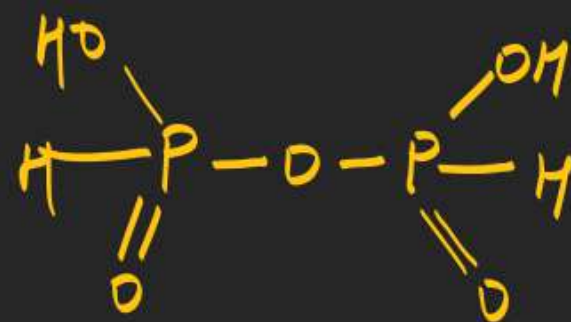
121. Which of the following compound has different value of basicity from the others ?



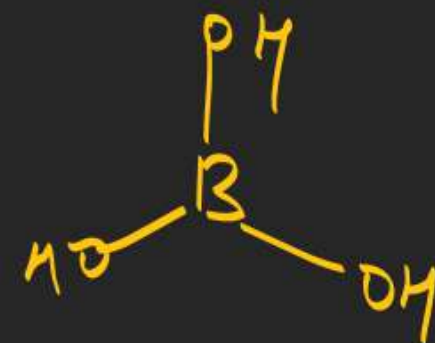
basicity =



basicity = 2



basicity = 2



basicity = one



basicity = 2



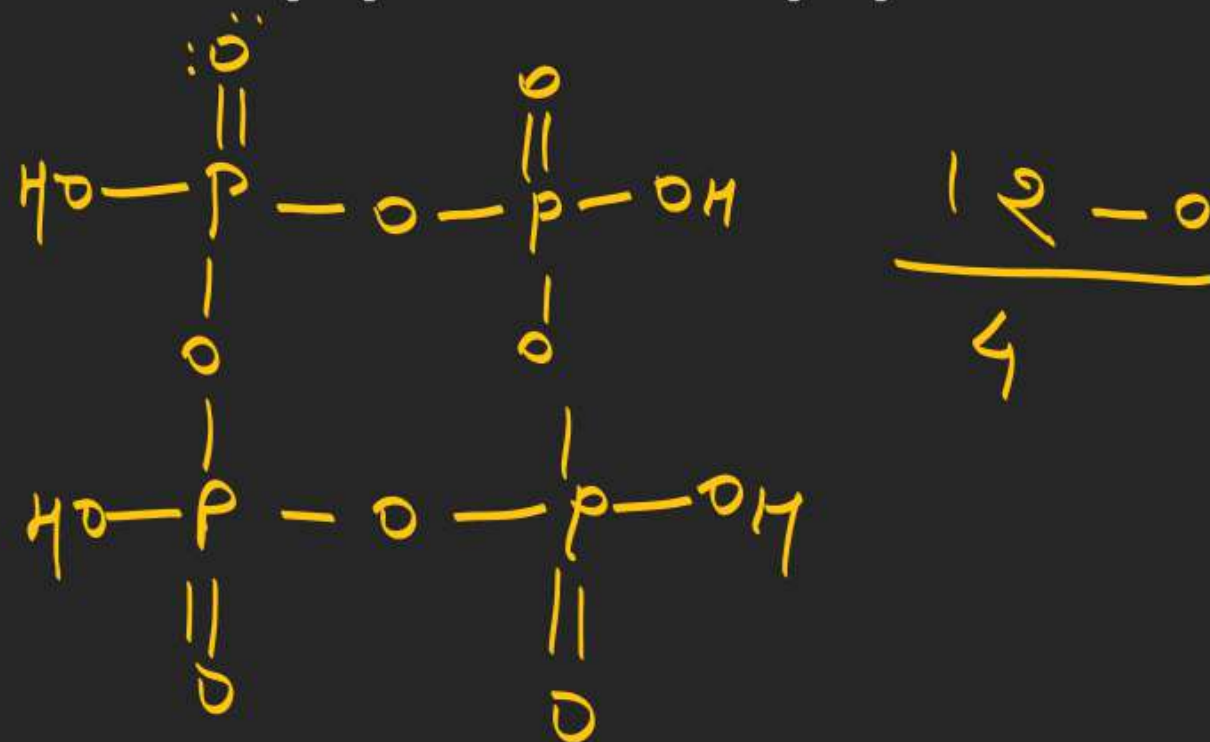
## Chemical bonding

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



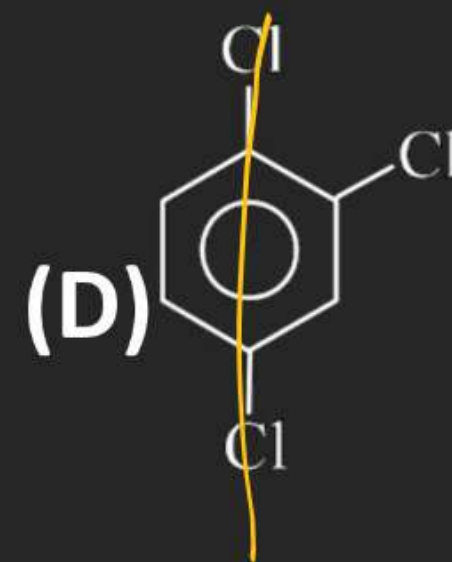
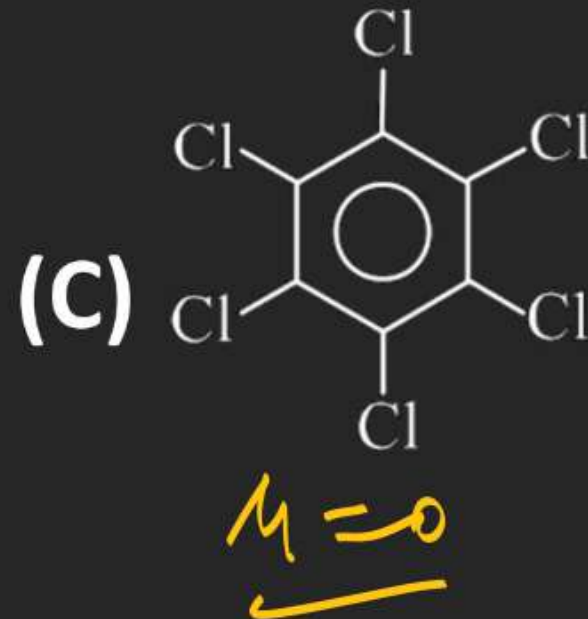
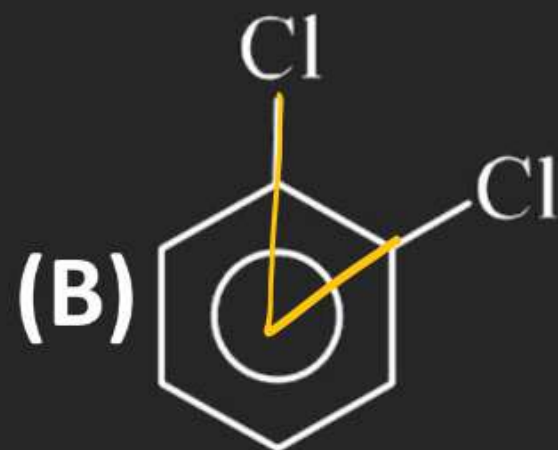
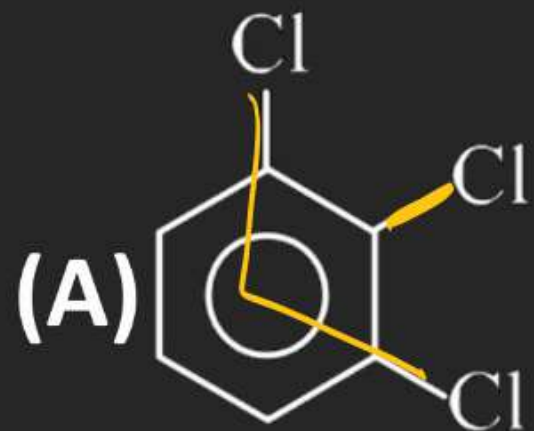
# Chemical bonding

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

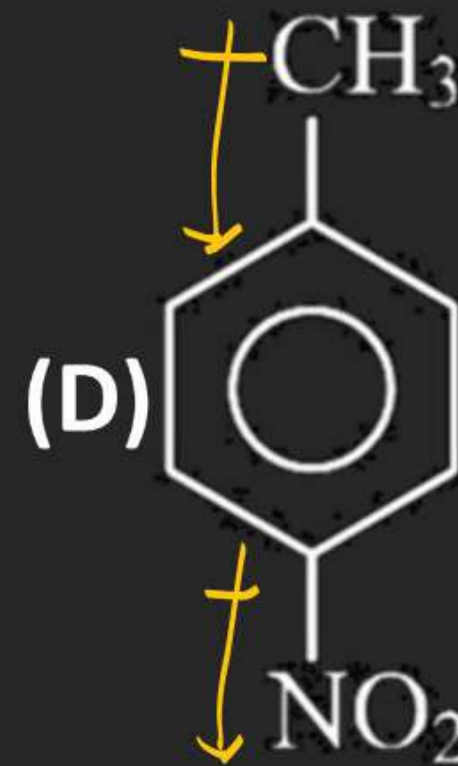
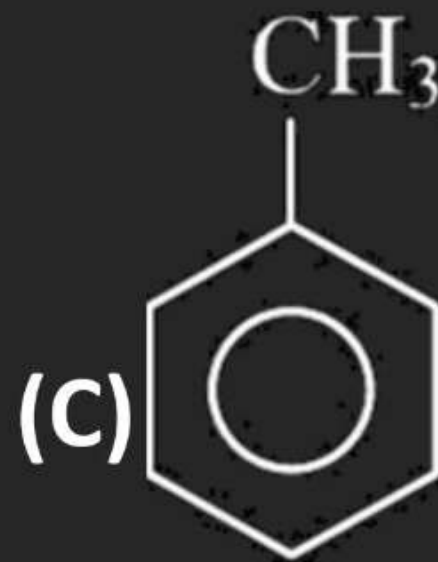
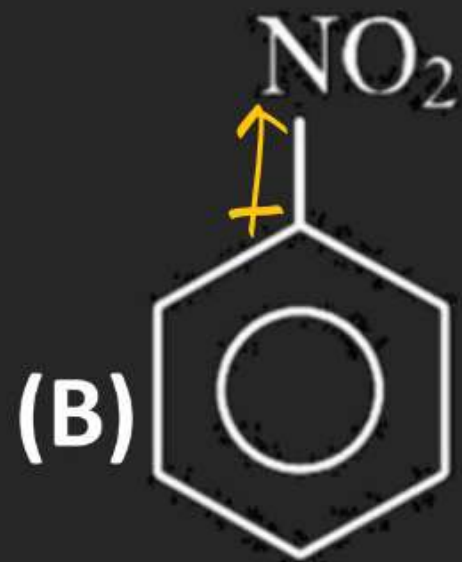
124. Which of the following have maximum dipole moment?





# 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)  $\text{SO}_3$



~~(B)  $\text{SO}_2$~~



(C)  $\text{CO}_2$



(D)  $\text{BF}_3$

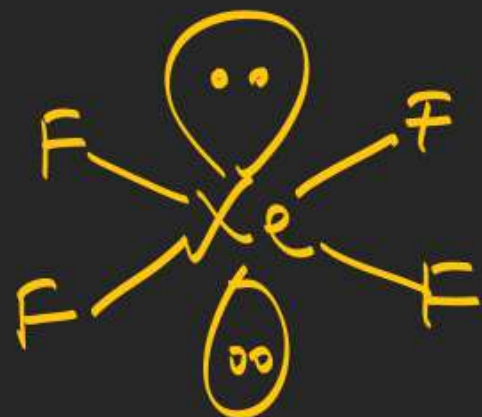


# Chemical bonding

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

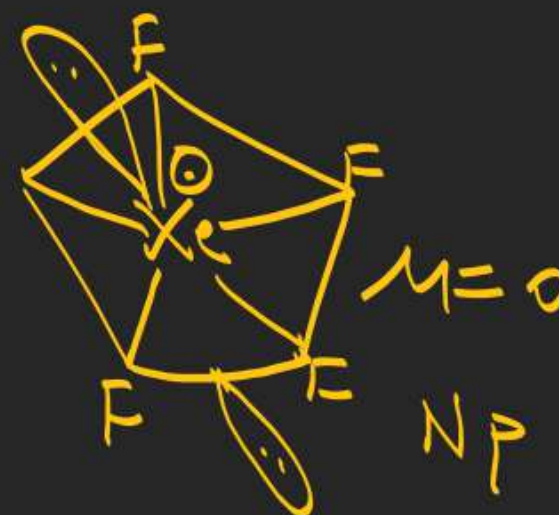


(P stands for polar and NP stands for non-polar)



$\mu = 0$   
non polar

	I	II	III	IV
(A)	P	NP	NP	P
(B)	NP	NP	NP	P
(C)	NP	P	NP	P
(D)	NP	P	P	NP

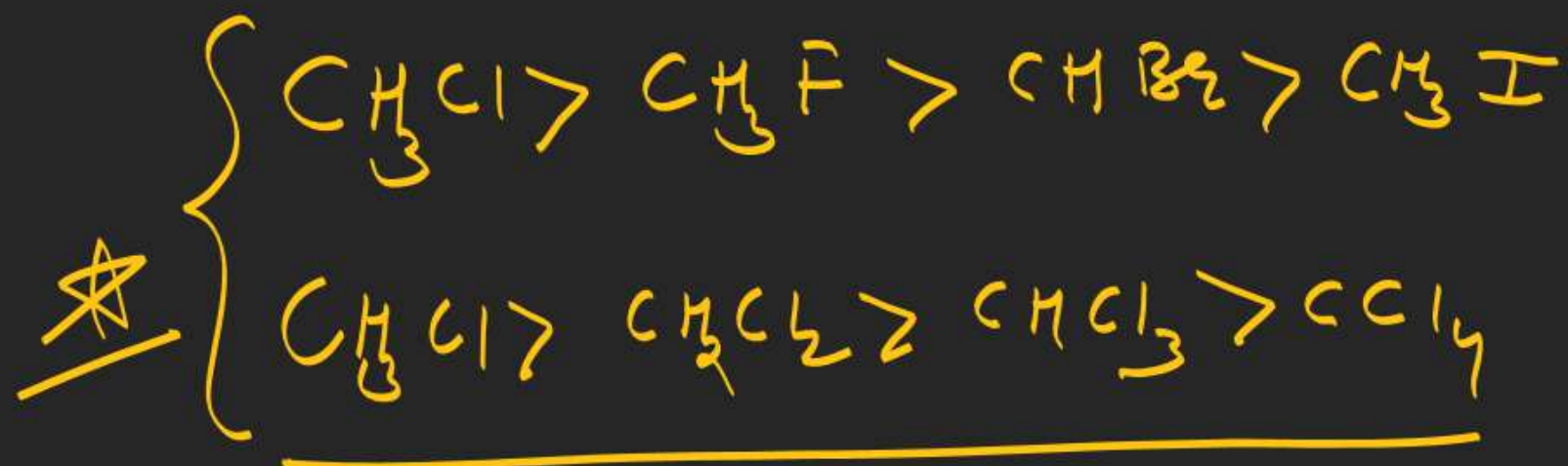




## Chemical bonding

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

- (A)  $\text{CH}_2\text{Cl}_2$     (B)  $\text{CHCl}_3$     (C)  $\text{CH}_3\text{Cl}$     (D)  $\text{CH}_3\text{F}$



# Chemical bonding

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

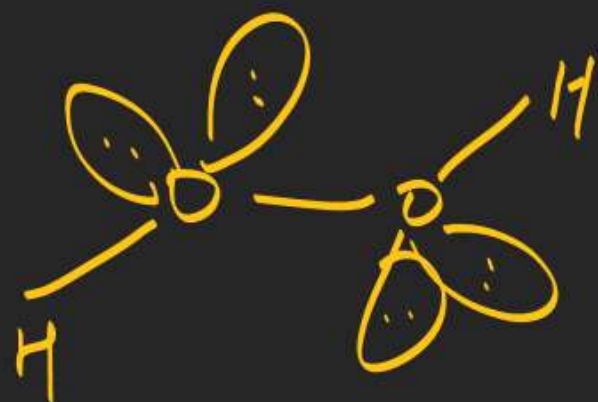


(A) 2

(B) 4

(C) 5

(D) 3



$\mu \neq 0$   
polar

