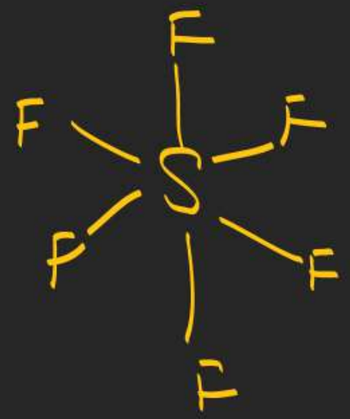
Nishant Jindal

Chemical bonding

EXERCISE # 2

1. Lewis theory fails to explain which of the following structure(s) ?

(A) SF_6 (B) XeF_2 (C) XeF_4 (D) $BeCl_2$

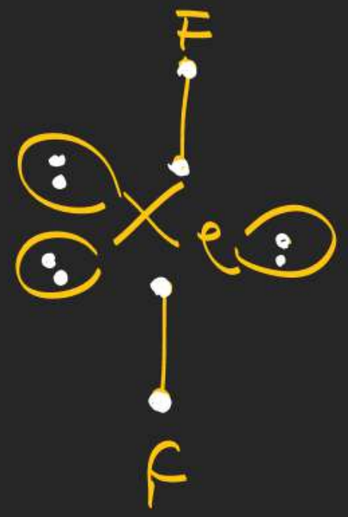


12e⁻

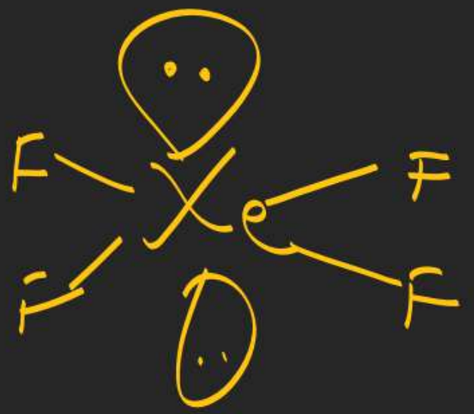
Lewis → Octet Complet

4e⁻

(Hypo valent)



10e⁻



12e⁻

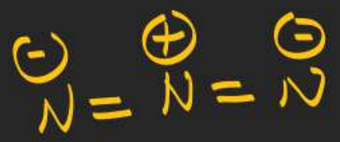
Nishant Jindal

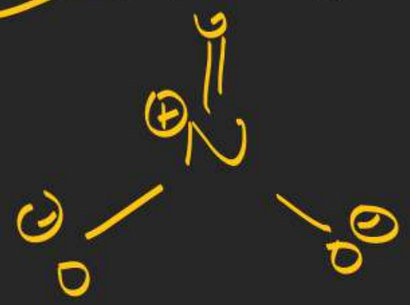
Chemical bonding

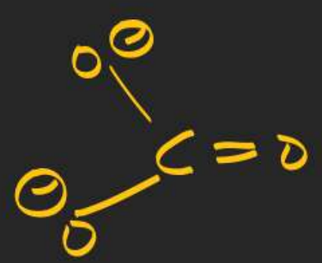
EXERCISE # 2

2. In which of the following molecule/ion the central atom have +1 formal charge ?

(A) O_3 (B) N_3^- (C) NO_3^- (D) CO_3^{-2}







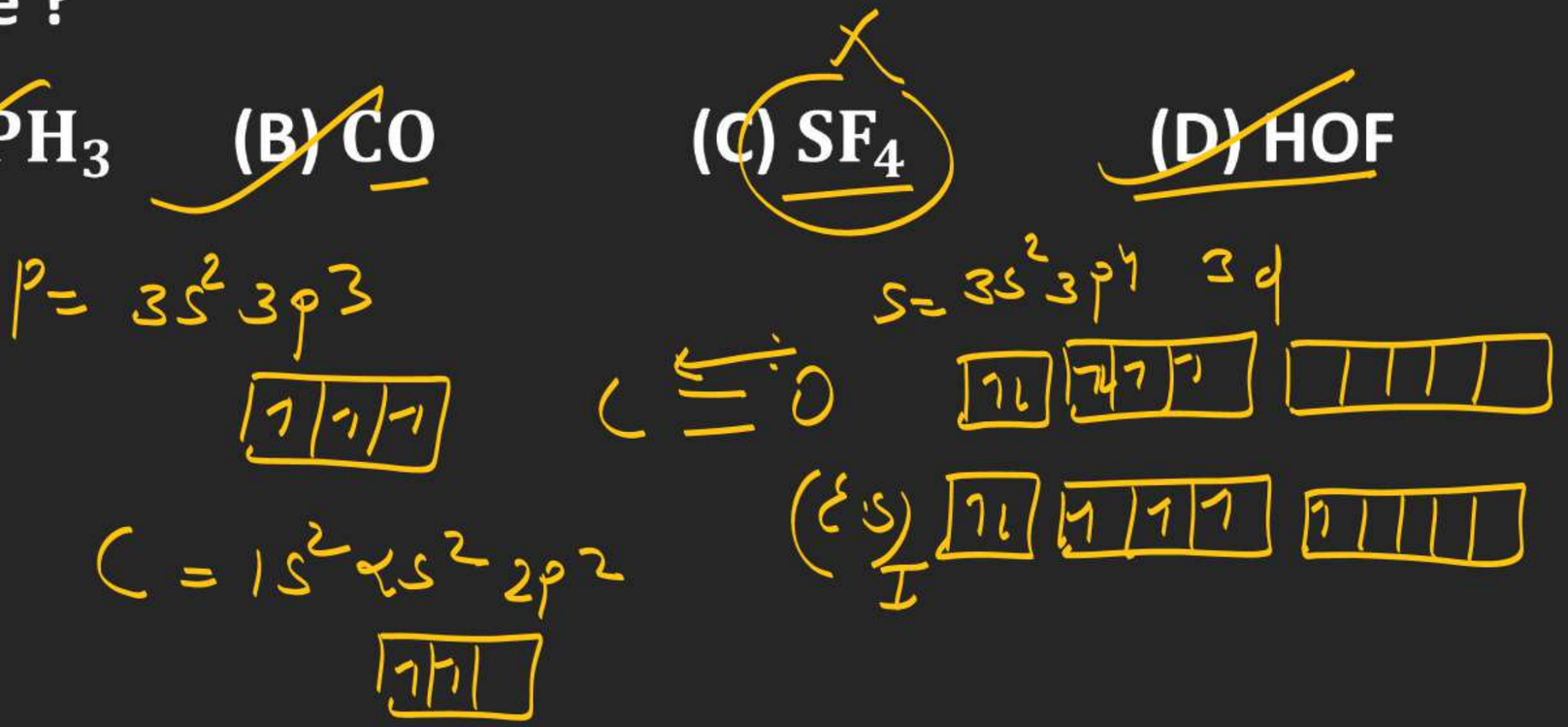
Nishant Jindal

Chemical bonding

EXERCISE # 2

3. In which of the following molecule all the atoms are present in ground state ?

(A) PH_3 (B) CO (C) SF_4 (D) HOF



Chemical bonding

EXERCISE # 2

4. In which of the following molecule number of lone pairs & number of covalent bonds are equal ?

(A) SO_3 (B) SO_2 (C) CO_2 (D) H_2Se

Nishant Jindal

Chemical bonding

EXERCISE # 2

5. Which of the following statement is incorrect regarding molecule NOCl

(A) It has covalent as well as ionic bond present in its structure.

(B) It has Cl atom present as a central atom.

(C) It has one lone pair.

(D) It has linear structure.

Rule ⇒ least E.N atom act as C.A but if E.N is same then atom which has Higher Covalency in G.S act as C.A.

Chemical bonding

EXERCISE # 2

6. Lewis theory fails to explain which of the following structure(s) ?

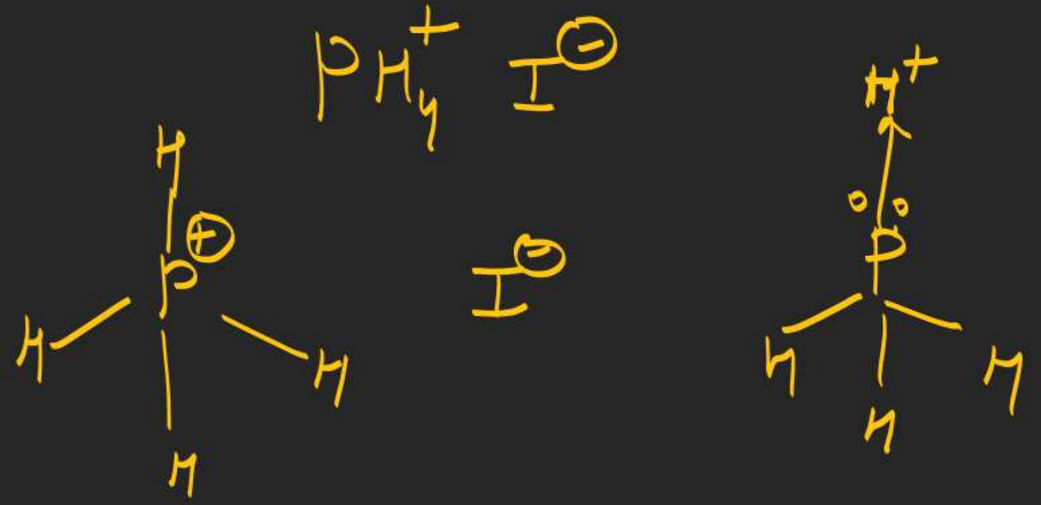
(A) SF_6 (B) XeF_2 (C) XeF_4 (D) $BeCl_2$

Chemical bonding

EXERCISE # 2

7. Type of bonds present in PH_4I is/are:

(A) Ionic (B) Covalent (C) Co-ordinate (D) H-bond



Chemical bonding

EXERCISE # 2

8. Which of the following set of elements have tendency to combine with each other by sharing of valence electron.

(A) Mg & O (B) B & F (C) Na & H (D) P & F

Ionic

Ionic

Chemical bonding

EXERCISE # 2

9. Coordinate bond is present in the following molecule(s) :

(A) NO_2 (B) N_2O_4 (C) PCl_4^+ (D) CO_3^{-2}

Chemical bonding

EXERCISE # 2

10. Which of the following set contains covalent as well as ionic species ?

(A) NO, CO, OF_2

(B) NH_3, BF_3, AlF_3

(C) $CO_2, CsCl, NO_2$

(D) SO_3, BCl_3, CaO

Al^{+3} $F^{\ominus}$

Ionic

Ionic

Chemical bonding

EXERCISE # 2

11. Which of the following statement is correct?

(A) Extent of overlapping : $3p - 4s < 3s - 3s$

(B) s-orbital can never form π-bond

(C) p-orbital can form σ and π as well as δ bond.

(D) non axial d-orbitals (d_{xy}, d_{xz}, d_{yz}) have more directional nature than the axial d-orbitals $(d_{z^2}$ & $d_{x^2-y^2})$

Chemical bonding

EXERCISE # 2

σ > π > δ

12. Select the correct statement(s) :

(A) σ bond is stronger than δ bond

(B) π bond is the result of collateral overlapping between two half filled atomic orbitals.

(C) s-orbital & py-orbital can be never form bond on z —-axis.

(D) p_y&p_y on z —-axis form δ bond

Chemical bonding

EXERCISE # 2

13. Choose the correct order(s) of strength of overlapping of orbitals :

(A) $2p - 2p > 2p - 3p > 3p - 3p$

(B) $3d - 3d > 3p - 3d > 3p - 3p$

(C) $2s - 3s > 3p - 3p > 3s - 3p$

(D) $2s - 2s > 2s - 2p > 2p - 2p$

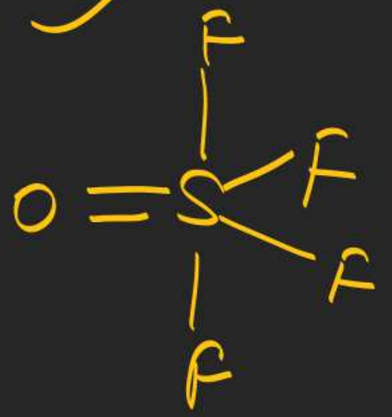
Nishant Jindal

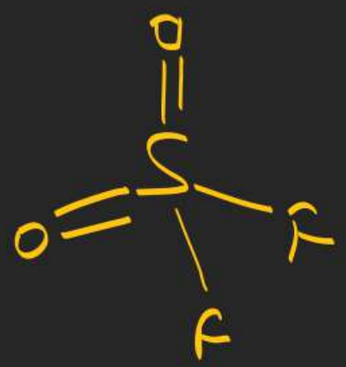
Chemical bonding

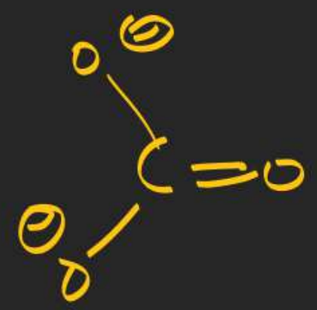
EXERCISE # 2

14. Which of the following molecules have $P_\pi - d_\pi$ bond in their structure ?

(A) SOF_4 (B) SO_2F_2 (C) CO_3^{-2} (D) CO





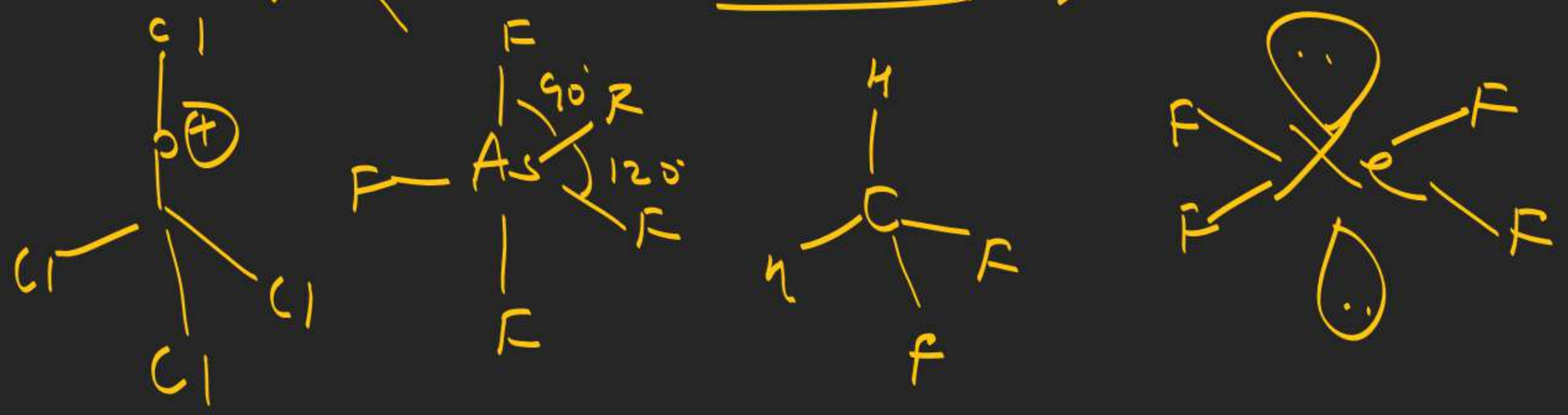


Chemical bonding

EXERCISE # 2

15. Which of the following specie(s) contains all bond angles equal?

(A) PCl_4^+ (B) AsF_5 (C) CH_2F_2 (D) XeF_4



Chemical bonding

EXERCISE # 2

16. Which of the following combination of bond pair (b.p) & lone pair (l.p.) gives same shape?

(i) 3b.p. +1 1.p. (ii) 2 b.p. +2 1.p. (iii) 3 b.p. +2 l.p.

(iv) 2.b.p. + 3 l.p. (v) 2 b.p. +1 l.p. (vi) 2 b.p. +0 l.p.

(A) (ii) & (v) (B) (vi) & (iv) (C) (iii) & (iv) (D) (i) & (iii)

Chemical bonding

EXERCISE # 2

17. Which of the following molecules has/have linear structure

(A) $BeCl_2$ (B) XeF_2 (C) XeO_4 (D) SF_4

Chemical bonding

EXERCISE # 2

18. Which of the following molecules have H Bonding

(A) H_2O (B) NH_3 (C) HF (D) CH_4

H Bond molecule

element ⇒ F, O, N

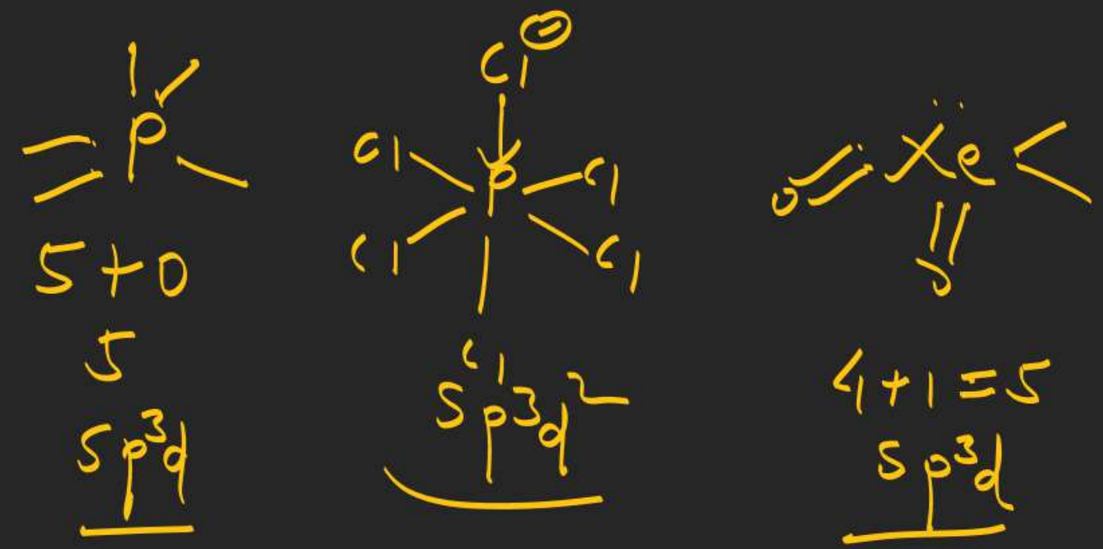
Nishant Jindal

Chemical bonding

EXERCISE # 2

19. Which of the following molecules is/are sp^3d hybridised

(A) PCl_5 (B) PCl_6^- (C) XeO_2F_2 (D) IF_7



Chemical bonding

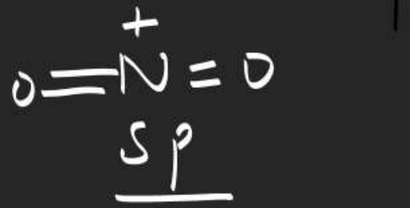
EXERCISE # 2

20. Which of the following molecules has/have $d_{x^2-y^2}$ and d_{z^2} orbitals in hybridisation

(A) SF_6 (B) XeF_4 (C) SF_2 (D) NO_2^+

sp^3d^2 sp^3d^2 sp^3

$d_{x^2-y^2}, d_{z^2}$ $d_{x^2-y^2}, d_{z^2}$



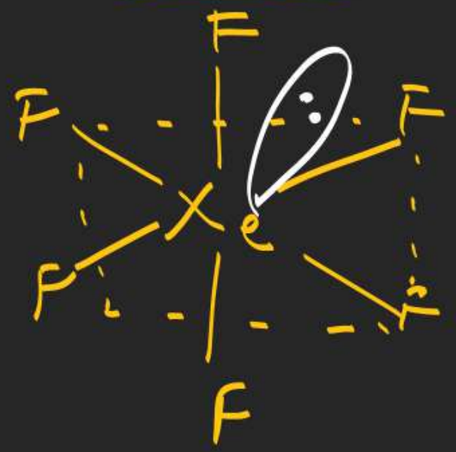
sp

Chemical bonding

EXERCISE # 2

21. Which of the following molecules has/have capped octahedral geometry

(A) XeF_6 (B) IF_6^- (C) $XeOF_5^-$ (D) XeF_2

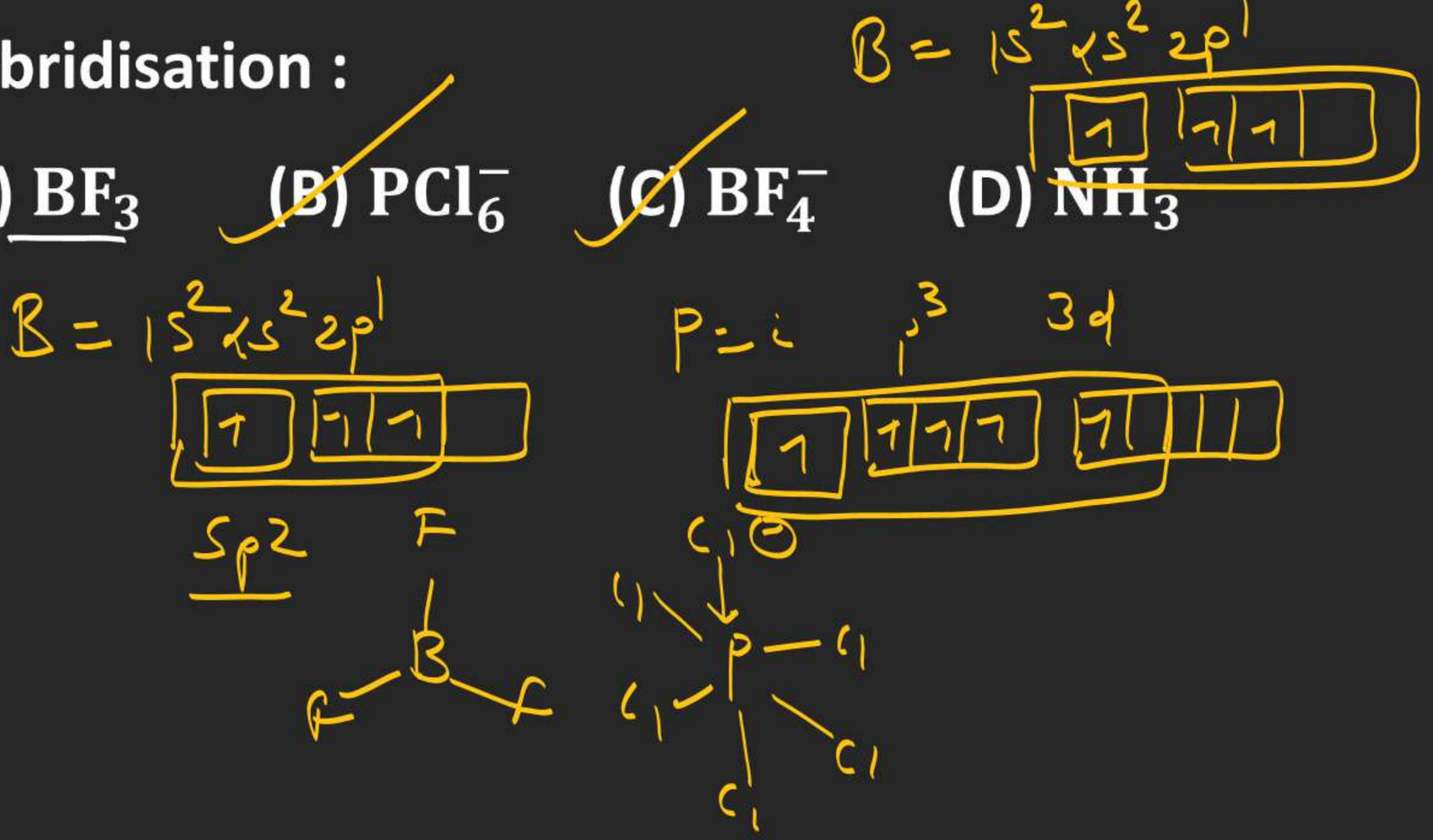


Chemical bonding

EXERCISE # 2

22. In which of following, vacant orbital take part in hybridisation :

(A) $\underline{BF_3}$ (B) PCl_6^- (C) BF_4^- (D) NH_3



Chemical bonding

EXERCISE # 2

23. Which of the following is correct match for AB_xL_y (where B = Bond pair & L = lone pair).

(A) $x = 3, y = 2$ planar & polar

(B) $x = 3, y = 1$ polar & non planar

(C) $x = 2, y = 3$ non planar & non polar

(D) $x = 4, y = 1$, non planar & polar