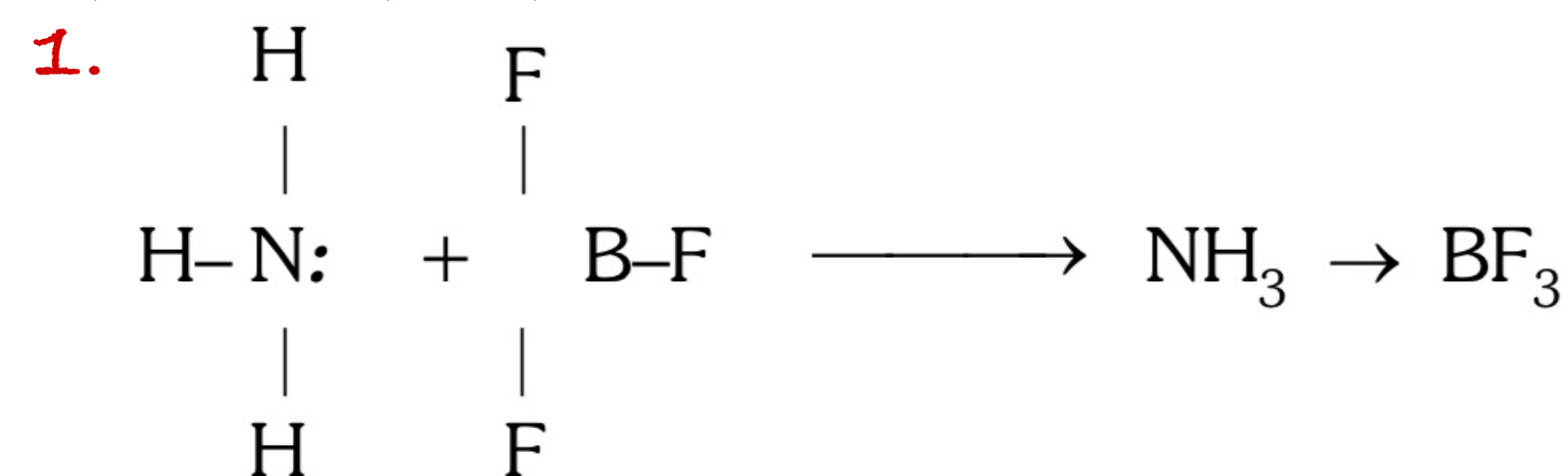


## Co-ordinate bond

SL AL

- (a) It is a covalent bond in which the shared electron pair come from one atom is called coordinate bond.
- (b) Necessary conditions for the formation of co-ordinate bond are -
- (i) Octet of donor atom should be complete and should have atleast one lone pair of electron.
  - (ii) Acceptor atom should have a defficiency of at least one pair of electron.
- (c) Atom which provide electron pair for shairing is called donor.
- (d) Other atom which accepts electron pair is called acceptor. That is why it is called donor-acceptor or dative bond.

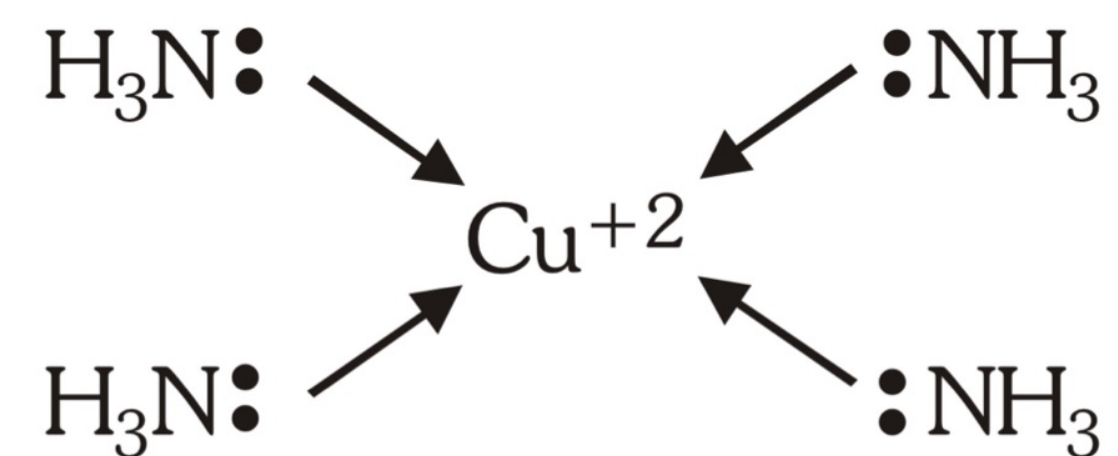
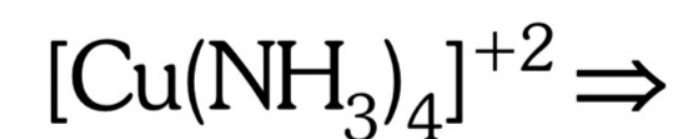
*Lewis base Lewis acid*



$\text{BF}_3$  is electron defficient compound.

## 2. Metal complex

Metal co-ordinate compounds -

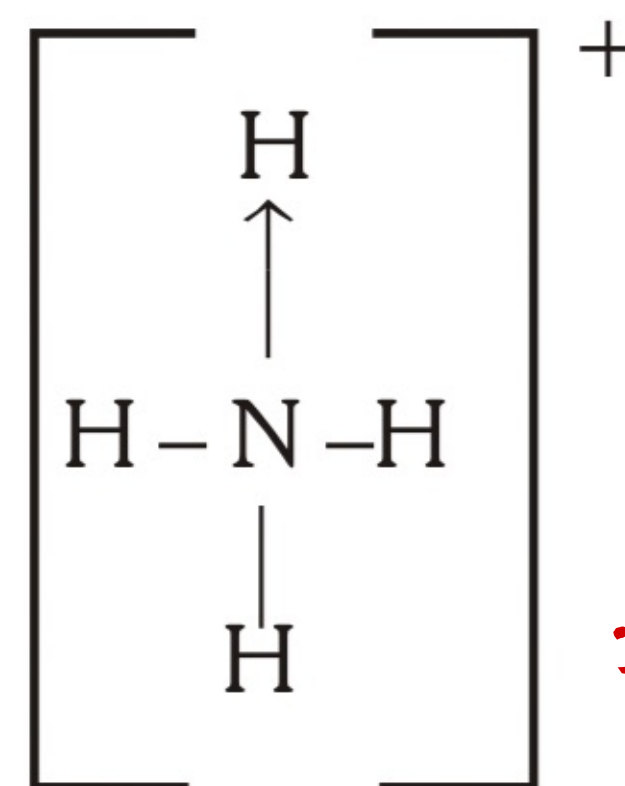


3.

**Ex.**

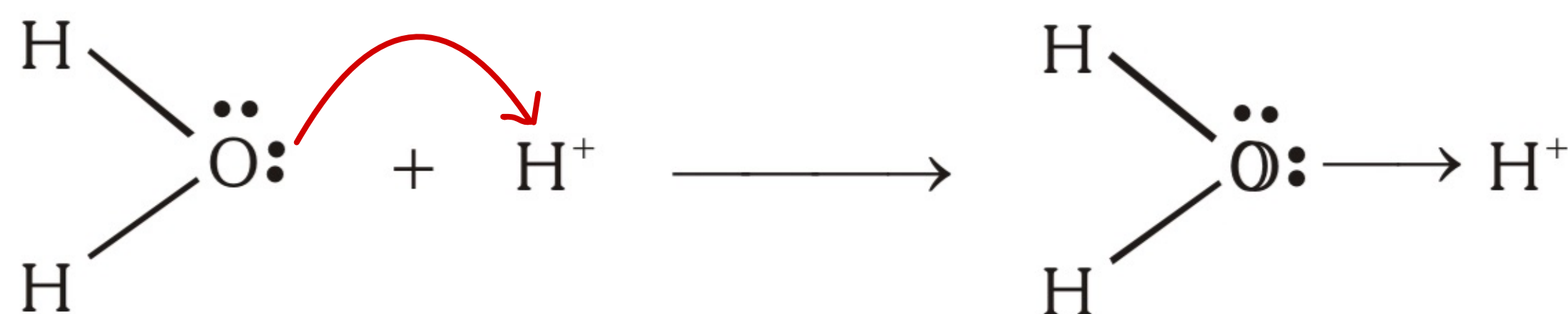


(Lowry-Bronsted acid)  
( $e^-$  acceptor)

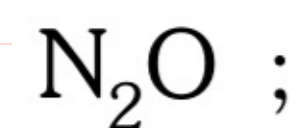


Protonation

4.

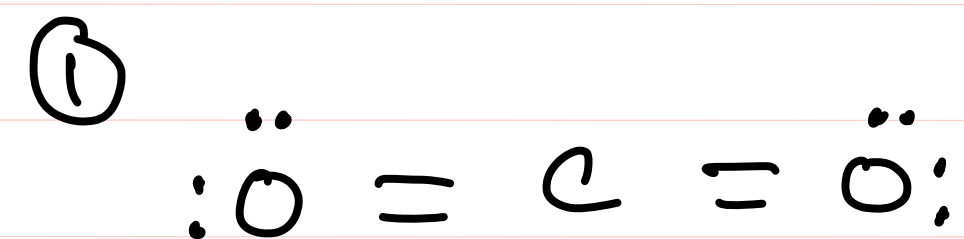


5.

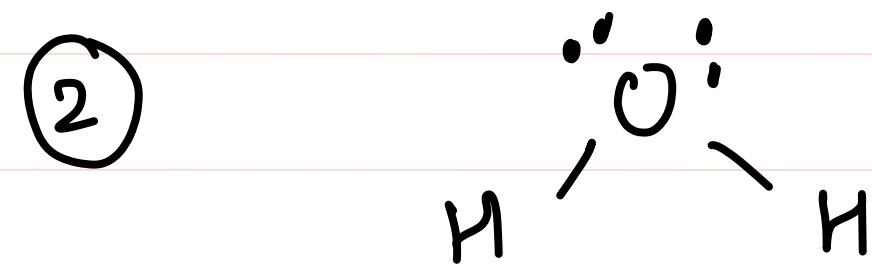


Draw structure of following compounds.

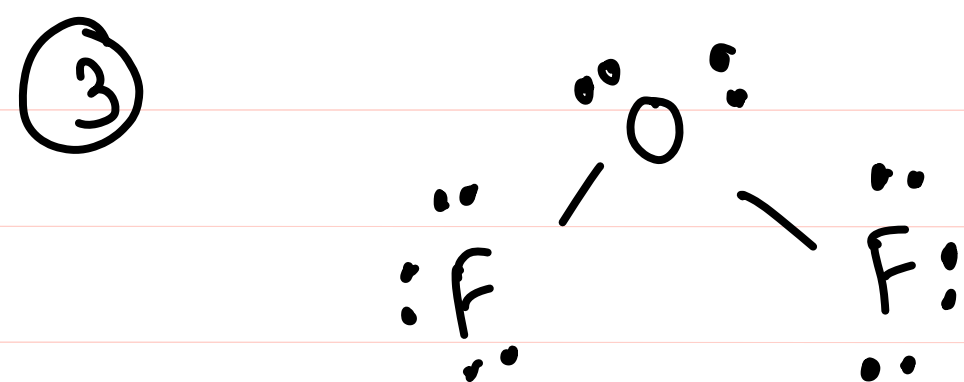
1.  $\text{CO}_2$



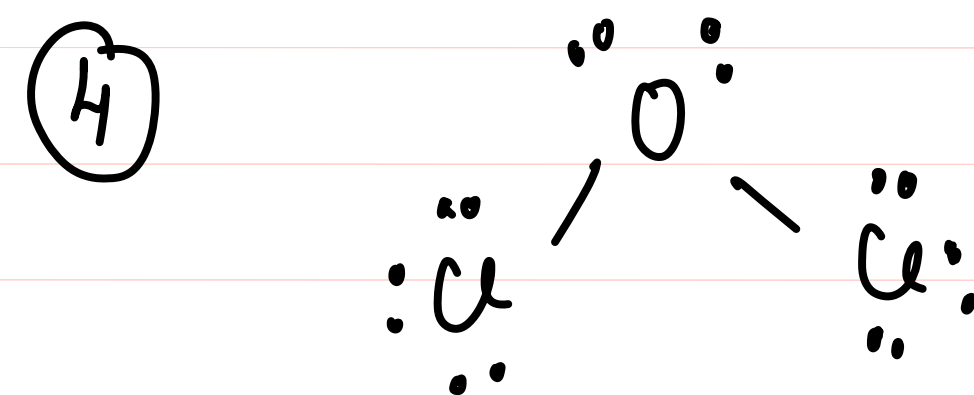
2.  $\text{H}_2\text{O}$



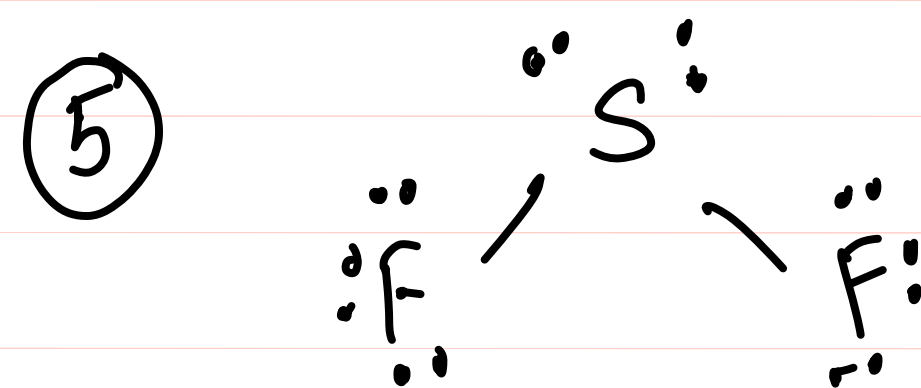
3.  $\text{OF}_2$



4.  $\text{OCl}_2$

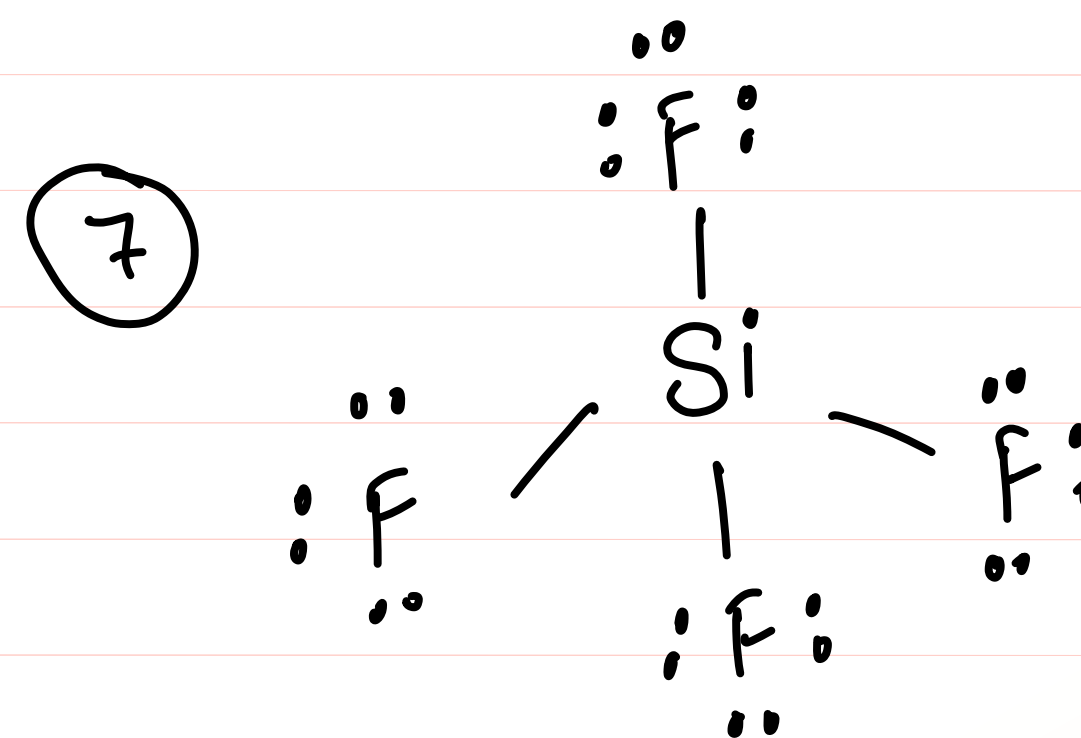
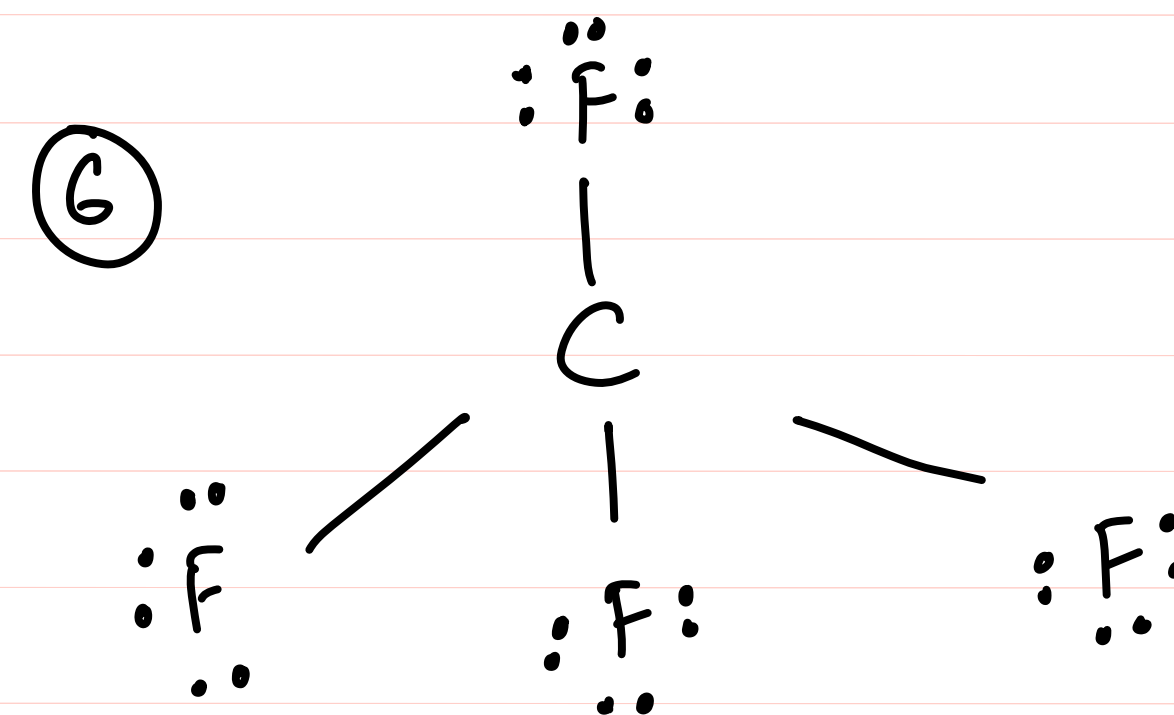


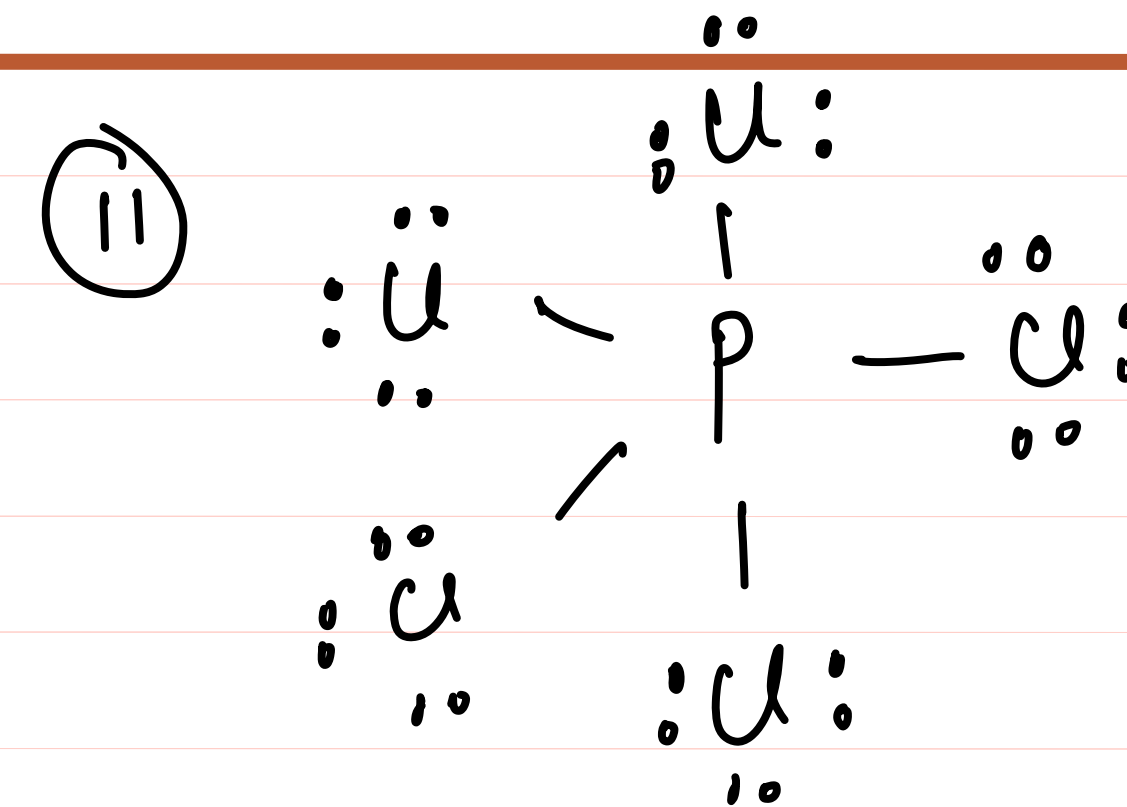
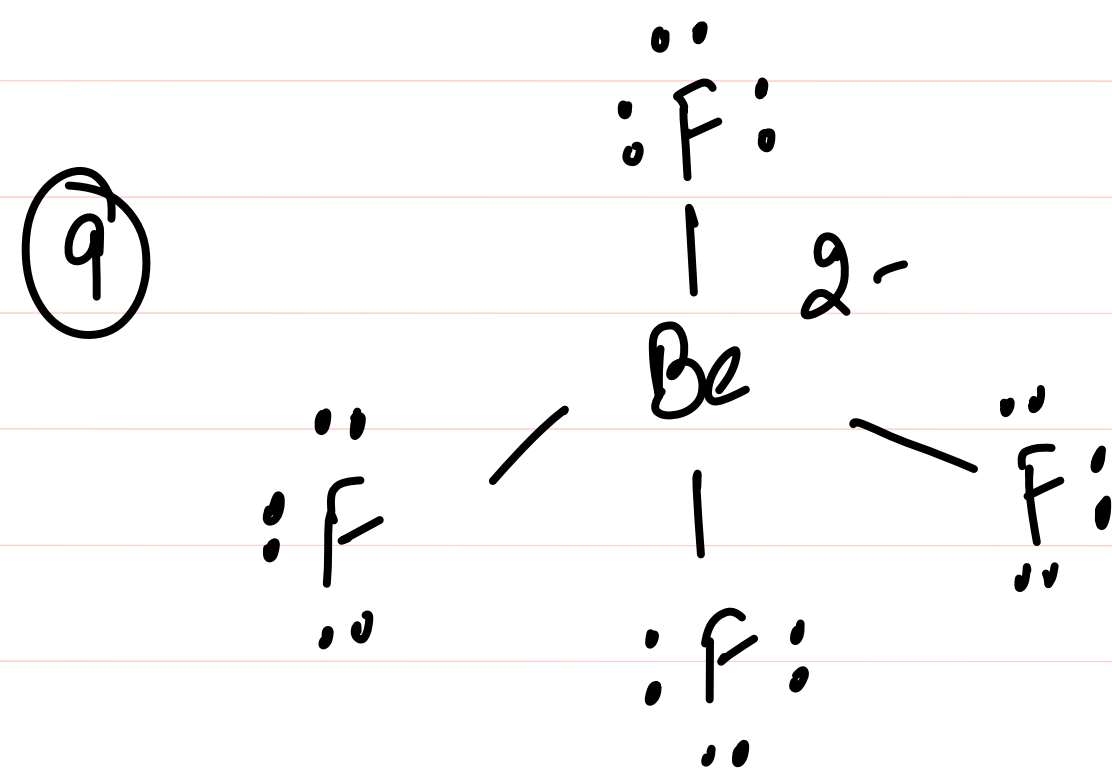
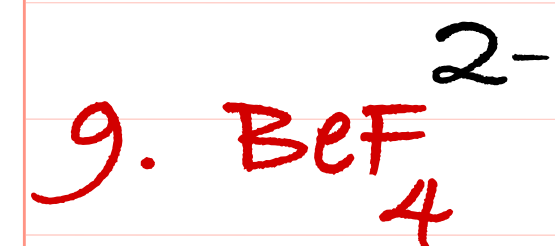
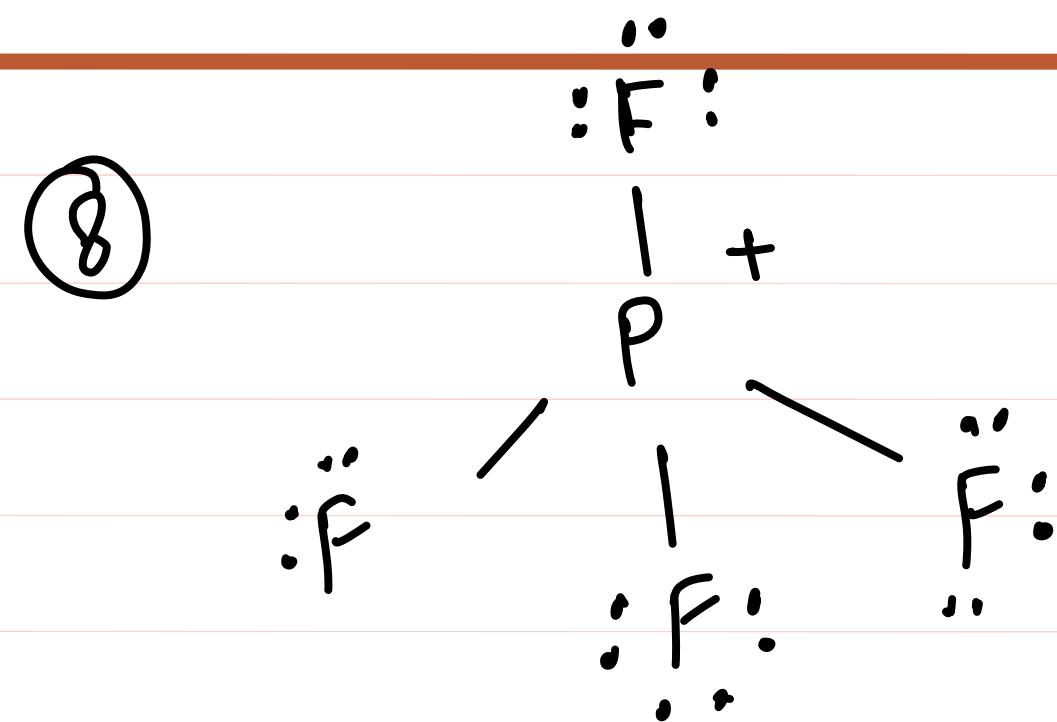
5.  $\text{SF}_2$



6.  $\text{CF}_4$

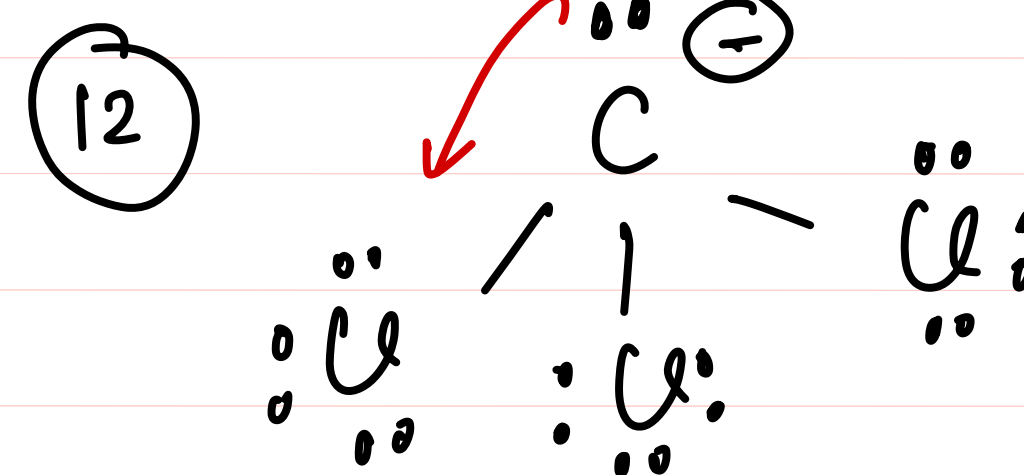
7.  $\text{SiF}_4$



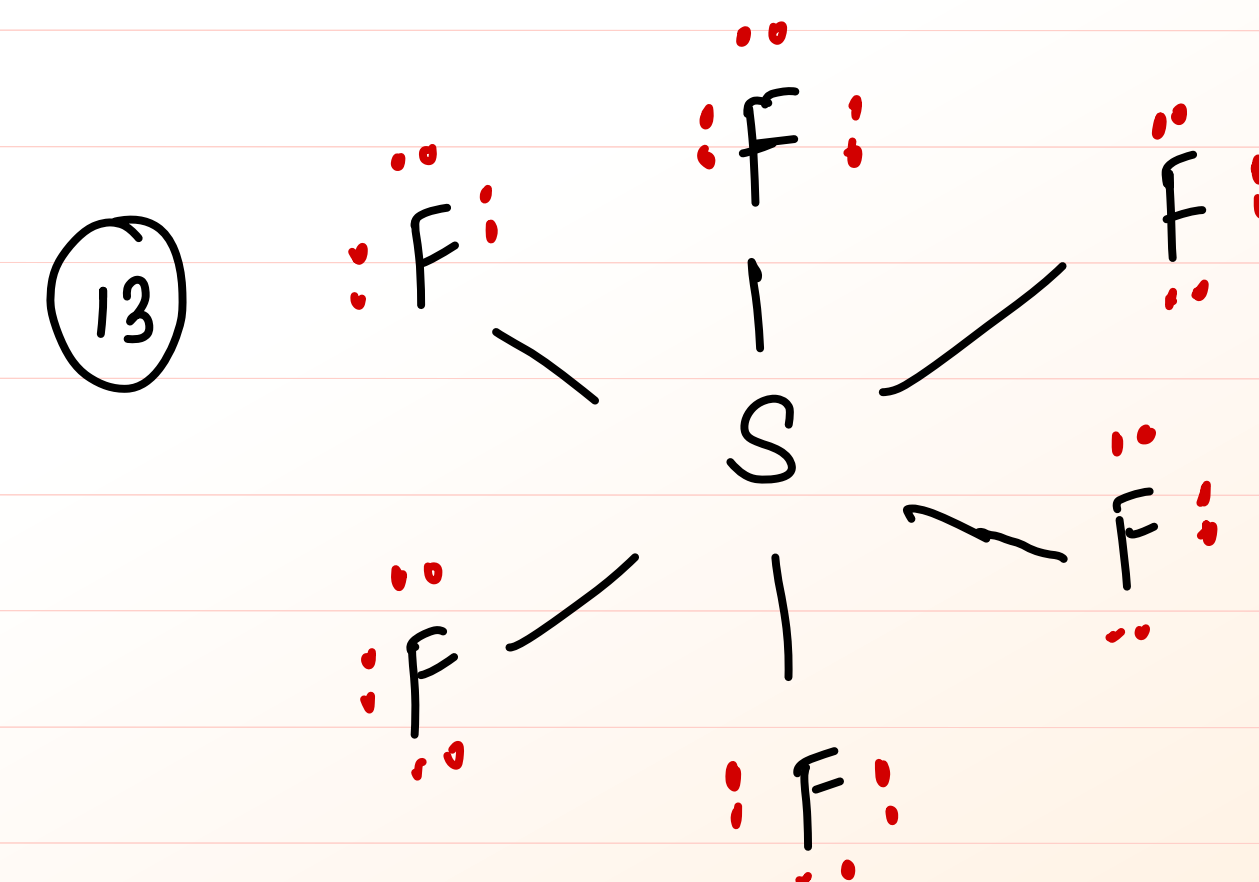
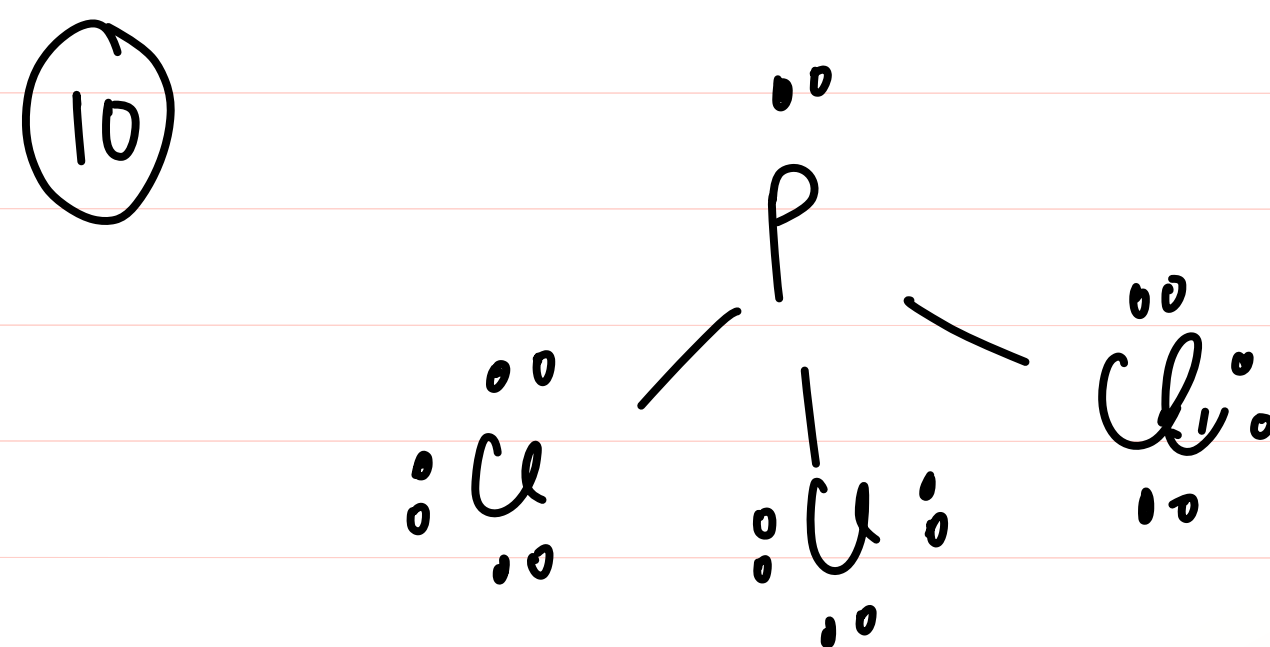


$lp = 1$

$lpe = 2$

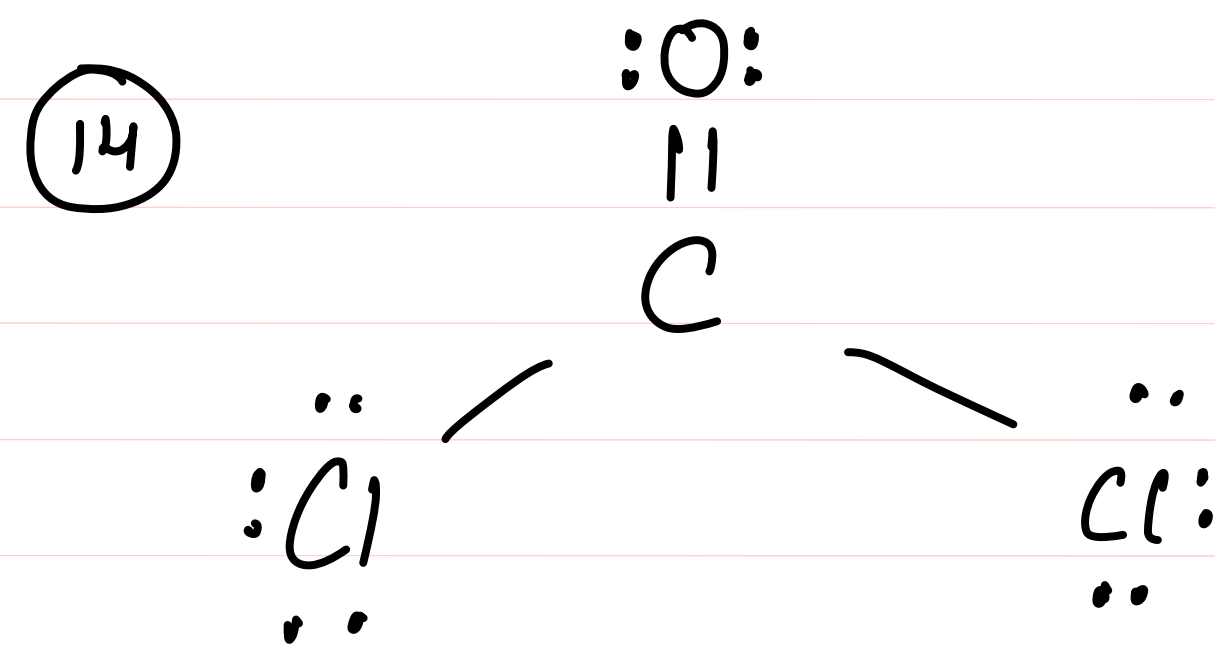


Back Bonding  
C 2s 2p

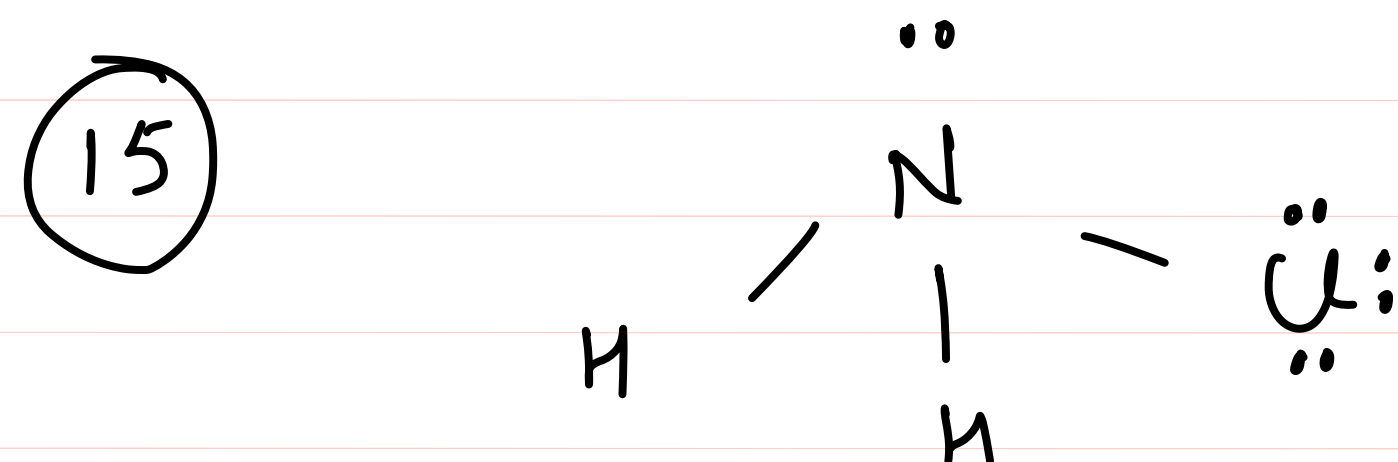




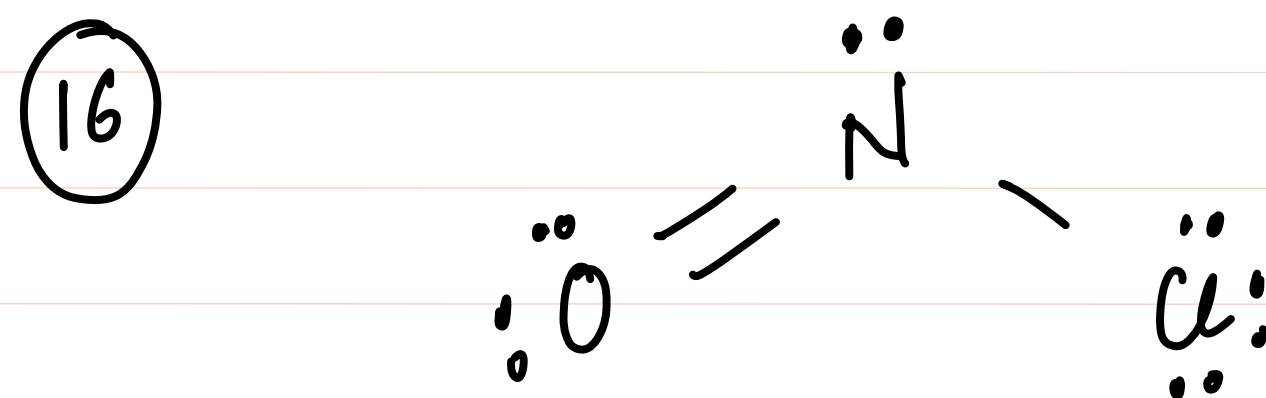
14.  $\text{COCl}_2$



15.  $\text{NH}_2\text{Cl}$

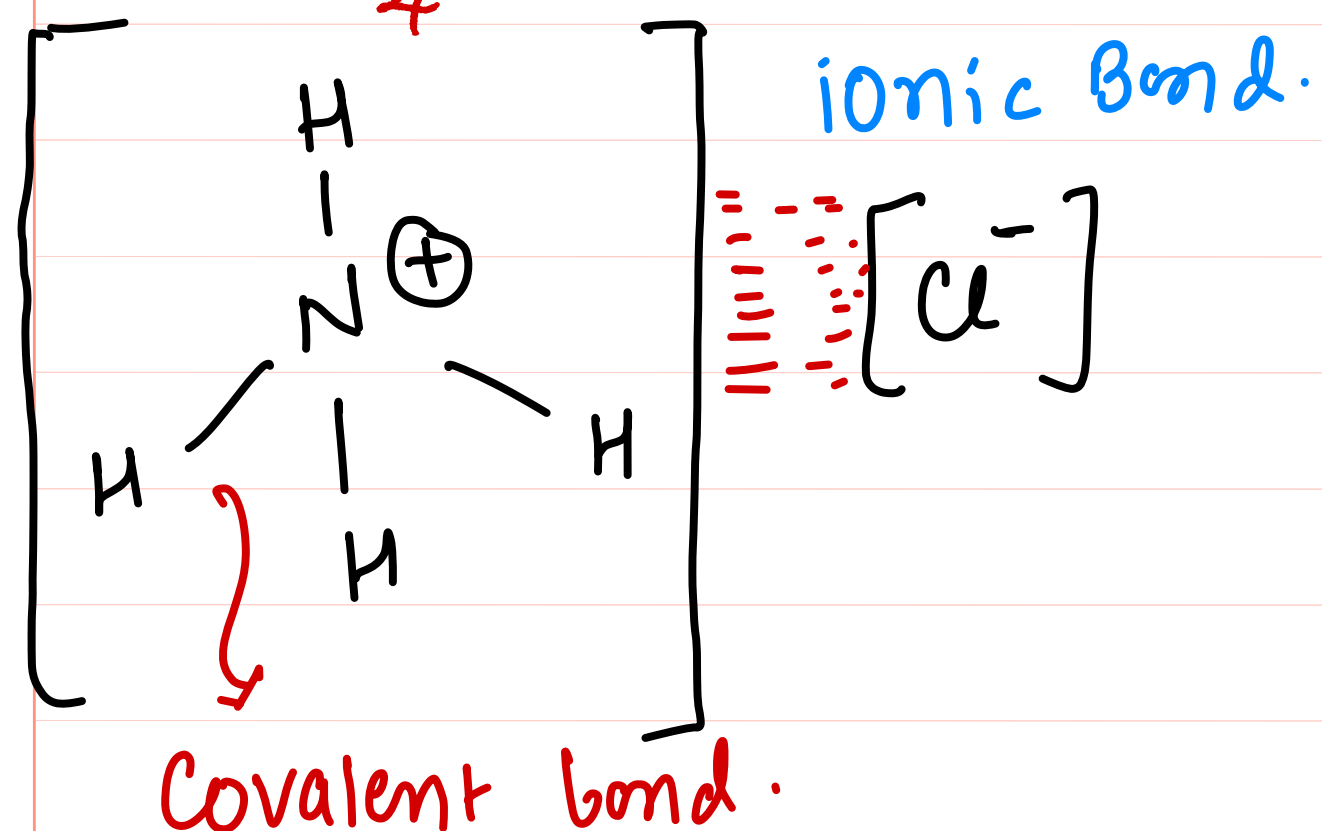


16.  $\text{NOCl}$

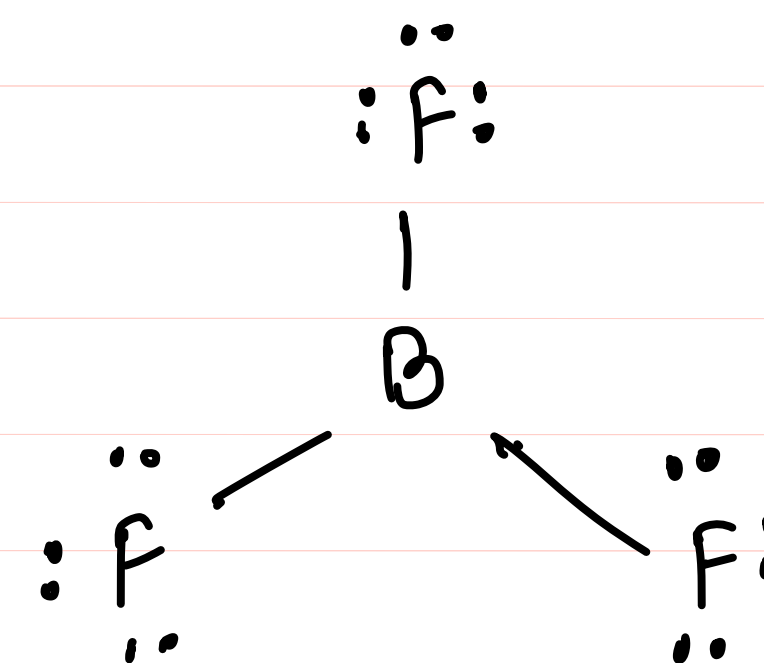


Draw structure of the following compound : practice problem

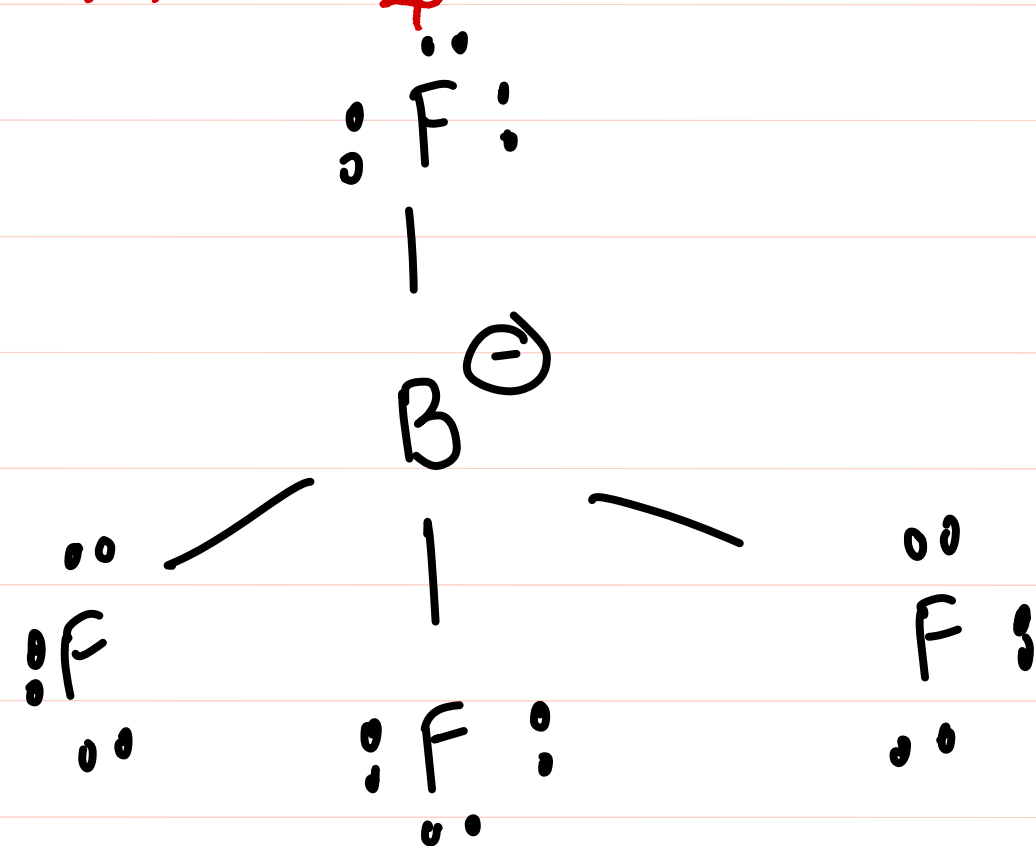
1.  $\text{NH}_4\text{Cl}$



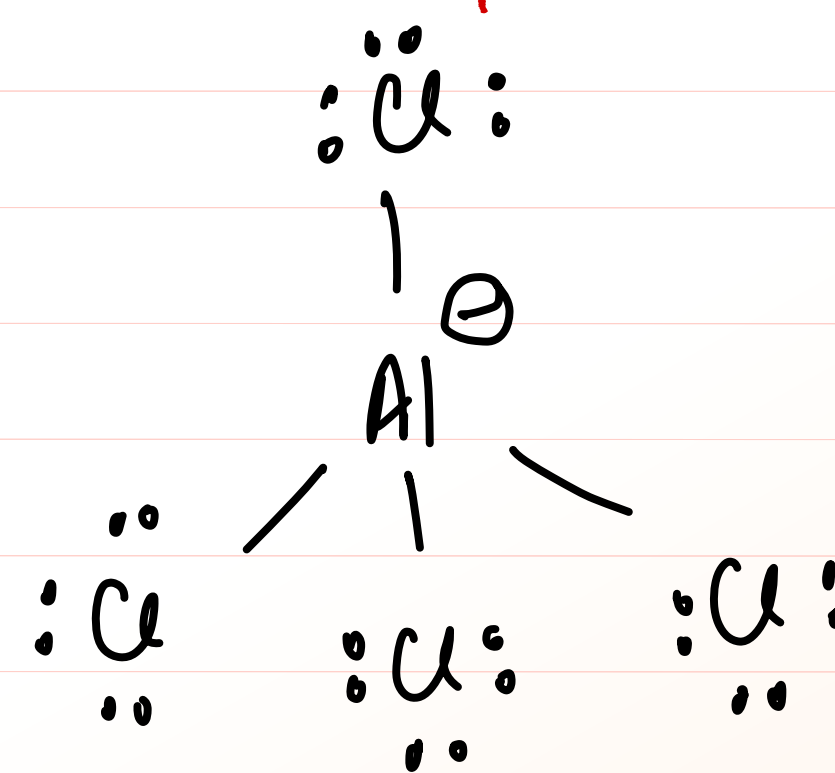
2(a)  $\text{BF}_3$



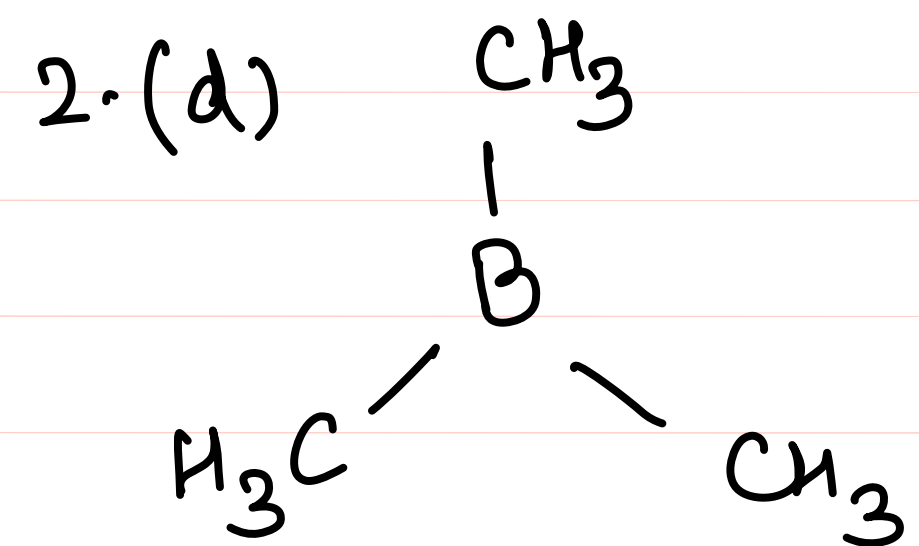
2(b)  $\text{BF}_4^-$



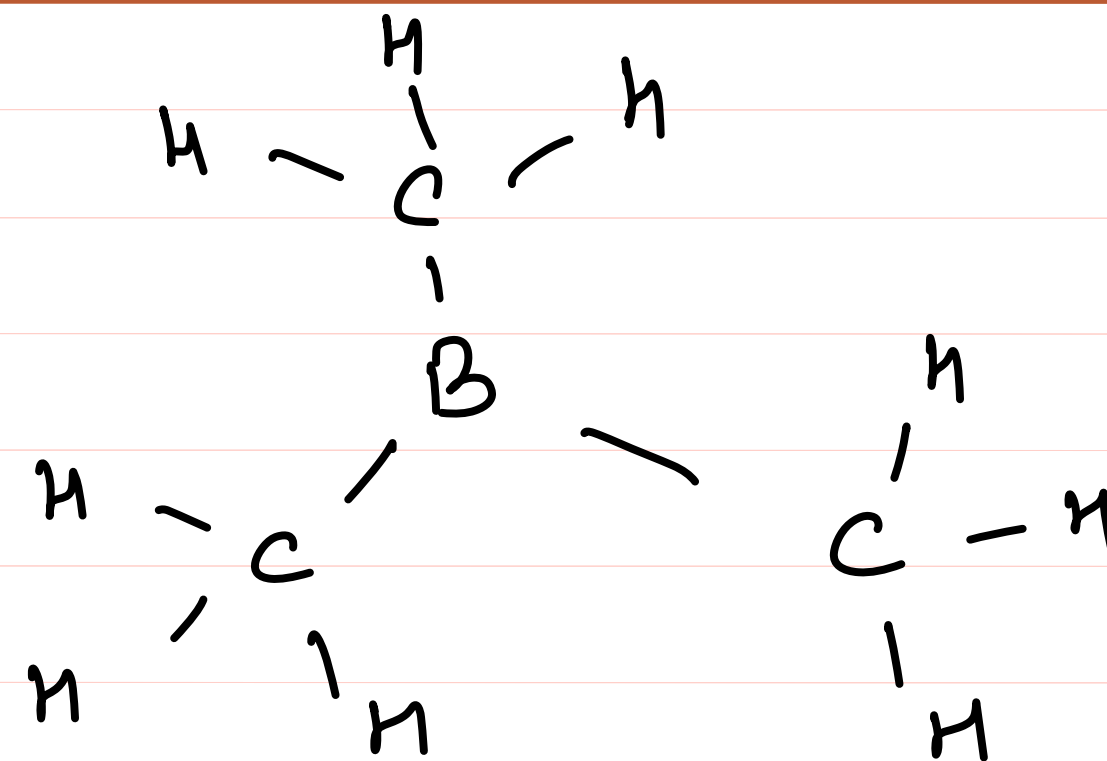
2(c)  $\text{AlCl}_4^-$



2. (d)  $B(CH_3)_3$



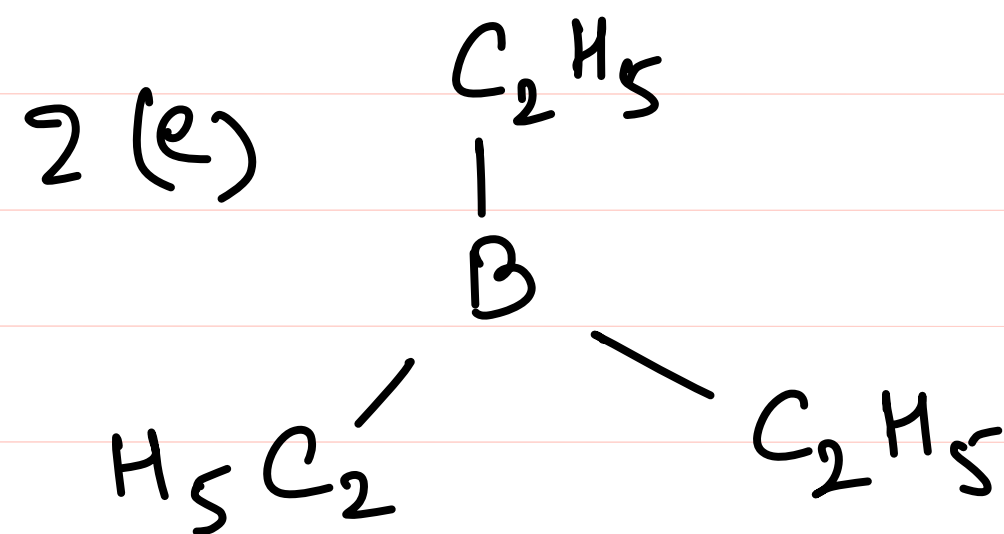
$\Rightarrow$



- R (alkyl group)

( ) -  $CH_3$   
free  
valency  
-  $C_2H_5$   
-  $C_3H_7$

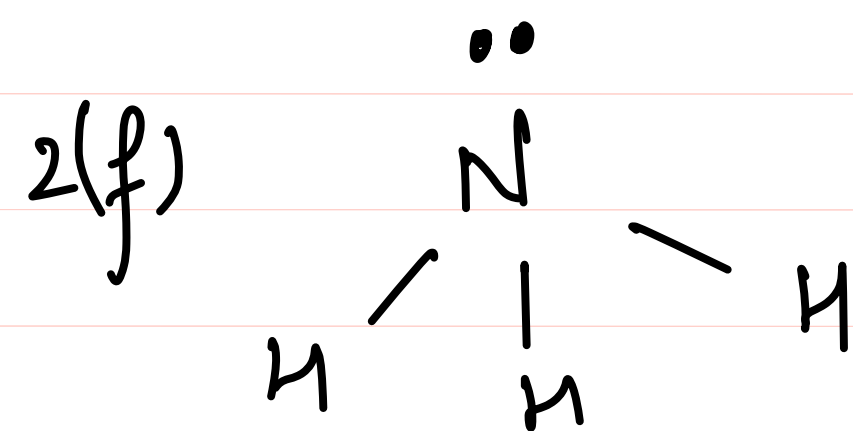
2. (e)  $B(C_2H_5)_3$



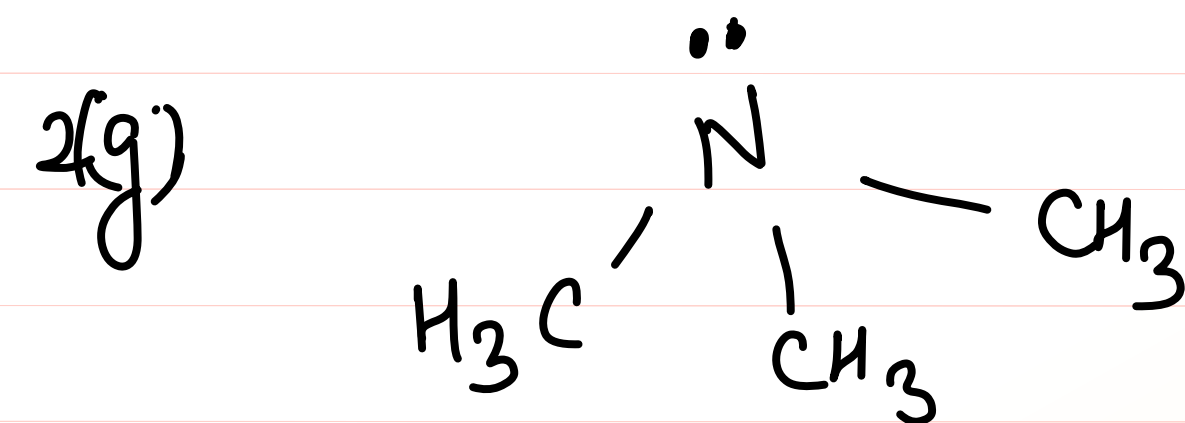
example

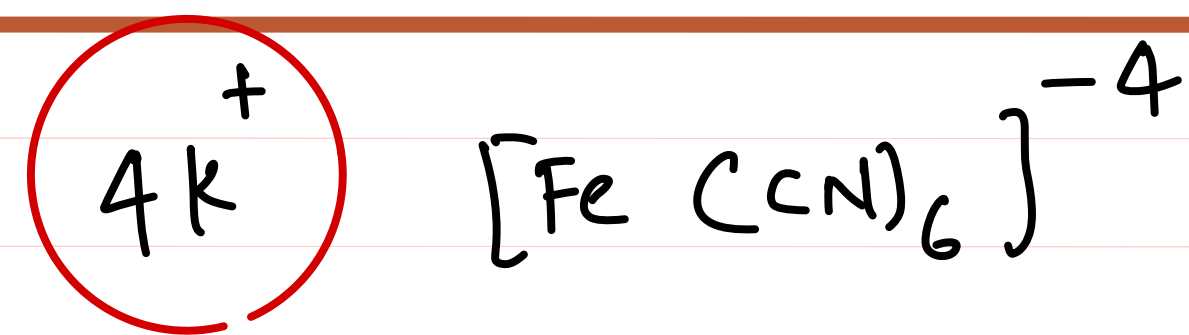
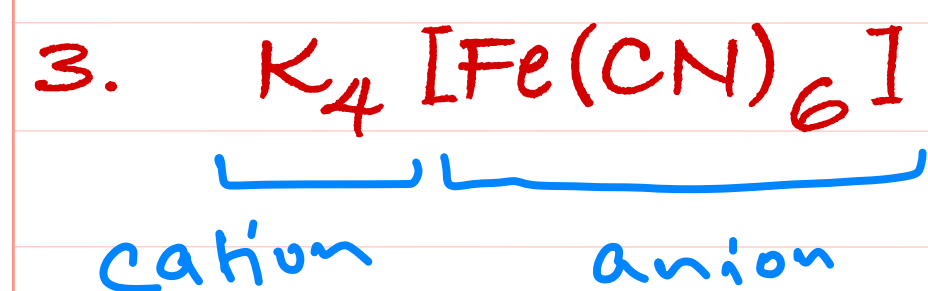
$\begin{array}{c} \cdot\cdot \\ : X - CH_3 \\ \cdot\cdot \end{array}$   
methyl halide

2 (f)  $NH_3$

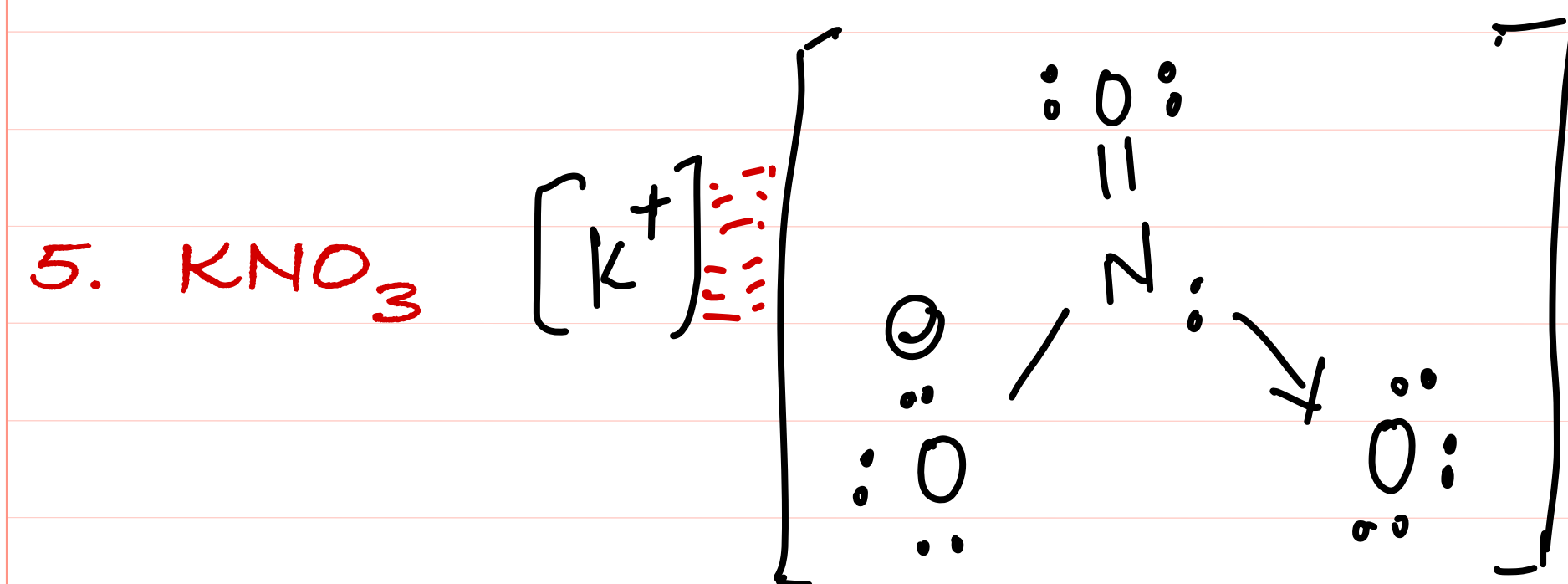
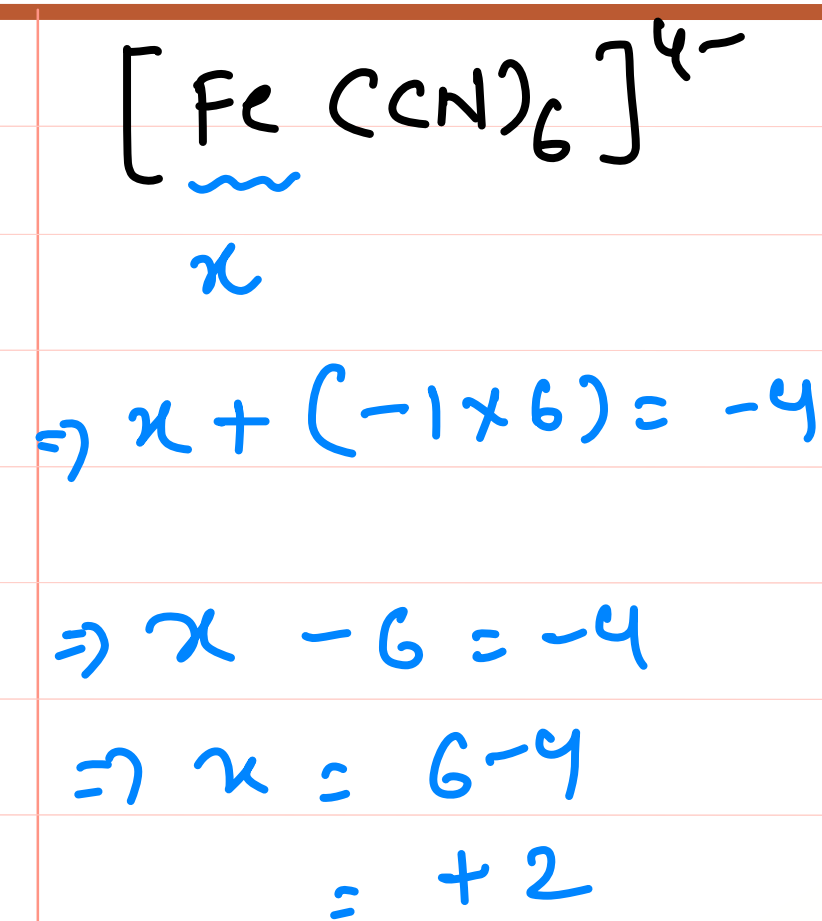
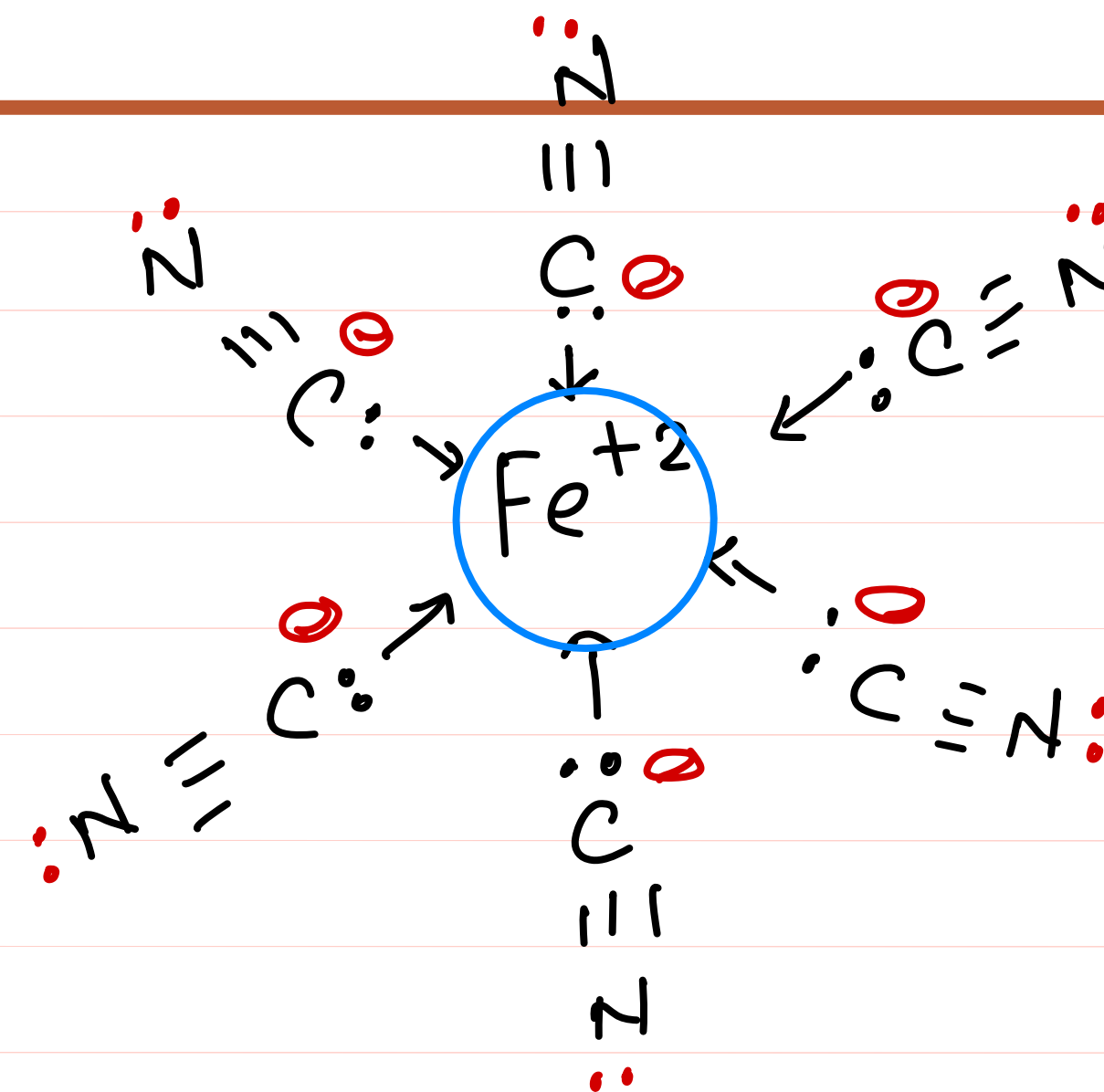


2 (g)  $N(CH_3)_3$



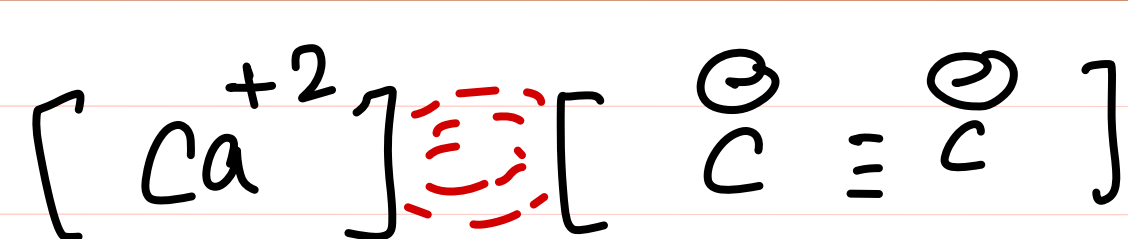


Co-ordination Compound.





6.  $\text{CaC}_2$

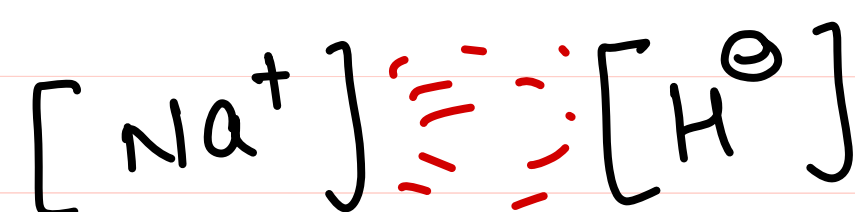


\* Ionic Bond  
\* Covalent Bond.

\* No of Sigma bond = 1  
\* No of pie bond = 2

Calcium hydride

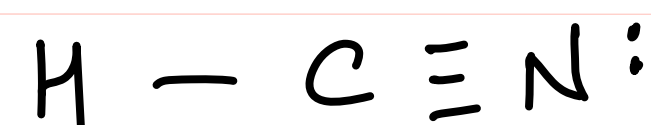
7.  $\text{NaH}$



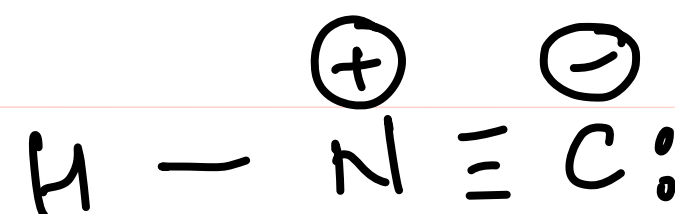
\* Ionic Bond.

Sodium hydride

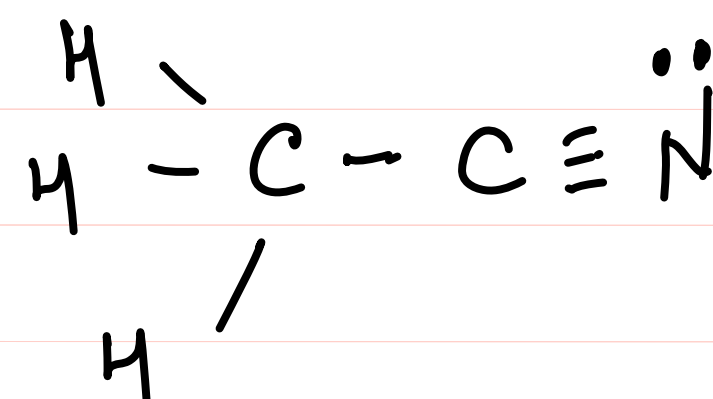
8.  $\text{HCN}$



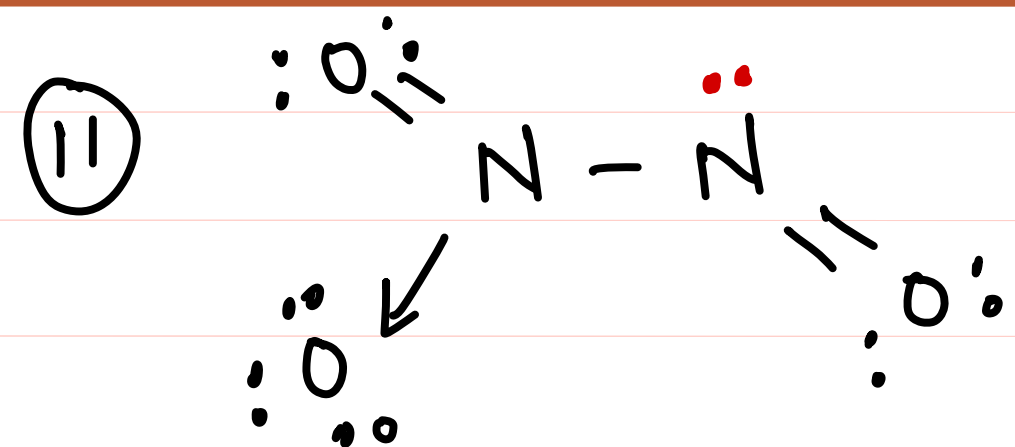
9.  $\text{HNC}$



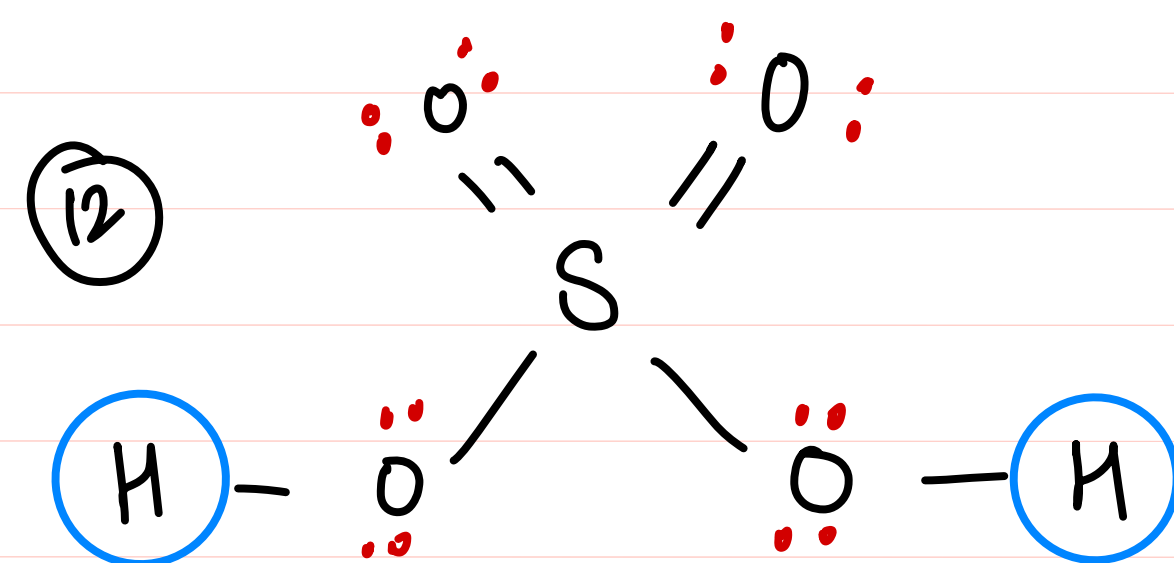
10.  $\text{CH}_3\text{CN}$



11.  $N_2O_3$

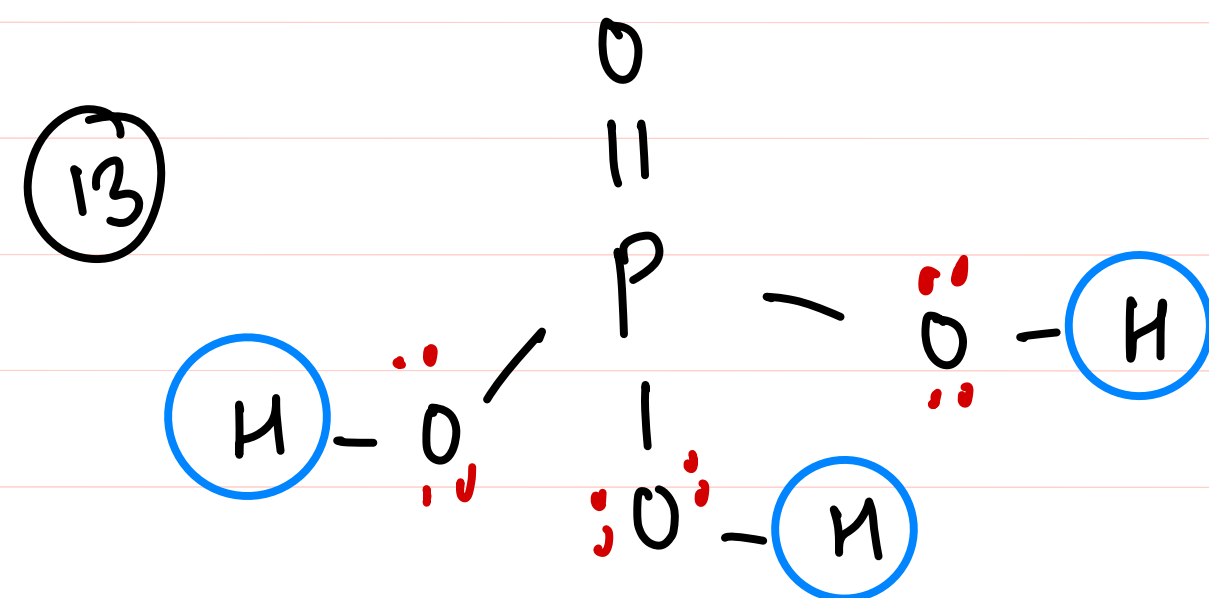


12.  $H_2SO_4$



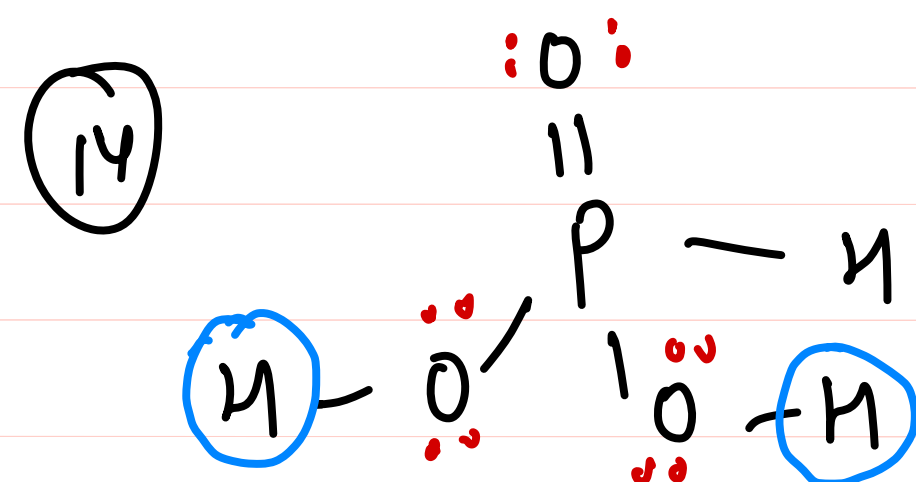
no of  $H^+$  it can donate = 2  
 (dibasic)  
 $\therefore$  basicity of an acid.

13.  $H_3PO_4$



no of  $H^+$  it can donate = 3  
 (tribasic)

14.  $H_3PO_3$



no of  $H^+$  it can donate = 2

15.  $H_3PO_2$

Oxidation number

