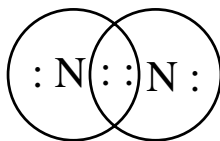


## CHEMISTRY

### 4. CHEMICAL BONDING

- Which of the following molecule doesn't have  $sp^3$  hybridisation ?  
(  $CH_4$ ,  $BF_3$ ,  $NH_3$ ,  $H_2O$  )
- write the symbol of the outermost shell of magnesium( $Z=12$ ) atom . How many electrons are present in the outermost shell of magnesium ?

- Raghu drew the  $N_2$  molecule as  
Ravi said this is wrong. Draw the correct representation of  $N_2$  molecule.



- a) Covalent bond      i)  $Na_2O$   
b) Ionic bond          ii)  $AlCl_3$   
   iii)  $H_2O$

Which of the following is correct ?

- A) a -i & ii , b-iii                      B) a -i , b- ii & iii  
C) a-ii & iii, b-i                        D) a -iii , b- i& ii
- Which theory explained bond angles in molecules ? Who proposed it ?
  - Write the Lewis structure for the formation of  $NH_3$
  - Which compounds exhibit high melting and boiling points ?
  - What is electronic configuration?
  - Which type of compounds are more soluble in polar solvents ?
  - Why are molecules more stable than atoms ?
  - Why are ionic compounds good electrolytes ?
  - What is 'Lattice energy' ?
  - $NaCl$  dissolves in water but not in benzene. Explain.
  - How many sigma and pi bonds are present in acetylene molecule between carbon atoms?
  - Two elements X and Y have the following configurations.

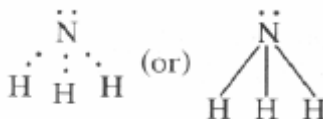
$$X = 1s^2 2s^2 2p^6 3s^2 3p^6 4s^2$$

$$Y = 1s^2 2s^2 2p^6 3s^2 3p^5$$

What is the formula of the compound ?

#### 4. CHEMICAL BONDING (KEY)

1.  $\text{BF}_3$
2.  $\text{Mg}^{+2}$ . 2 electrons are present in the outermost shell of Magnesium
3.  $:\text{N} \equiv \text{N}:$
4. D
5. Valency shell electron pair repulsion theory. Sidgwick and Powell
6. Lewis structure of the  $\text{NH}_3$  is



7. Ionic compounds exhibit high melting and boiling points.
8. A systematic arrangement of electrons in the atomic orbits is called electronic configuration.
9. Ionic compounds are more soluble in polar solvents.
10. Molecules have lower energy than that of the combined atoms. Molecules are more stable than atoms since chemical species with lower energy are more stable.
11. 1) Electrolytes produce ions in solution, which carry current.  
2) Ionic compounds in the fused state and aqueous solutions contain ions moving freely. Hence they conduct electricity.
12. The energy released when gaseous positive and negative ions are brought together from infinity to form one mole ionic crystals is called lattice energy.
13.  $\text{NaCl}$  dissolves in water because of hydration. Water being a polar molecule has positive and negative ends which hydrate  $\text{Na}^+$  and  $\text{Cl}^-$  ions. Benzene being non-polar cannot solvate the ions of  $\text{NaCl}$ .
14.  $\text{HC} \equiv \text{CH}$ , one sigma and two pi bonds are present.
15. The electronic configuration of X is  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2$   
So its valency is 2.  
The electronic configuration of Y is  $1s^2 2s^2 2p^6 3s^2 3p^5$   
So its valency is 1.  
 $\therefore$  The formula of the compound is  $\text{XY}_2$