

Chemical Bonding

1. The covalent bond in which the electrons are shared equally between the combining atoms.

(2019)

Answer:

Non-polar covalent bond

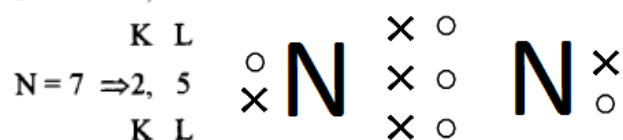
2. Draw the electron dot structure of Nitrogen molecule [N = 7]

(2019)

Answer:

Nitrogen molecule

N = 7 \Rightarrow 2, 5



Nitrogen atoms share three electrons and so forms a triple covalent bond.

3. Draw the electron dot structure of Sodium chloride [Na = 11, Cl = 17]

(2019)

Answer:

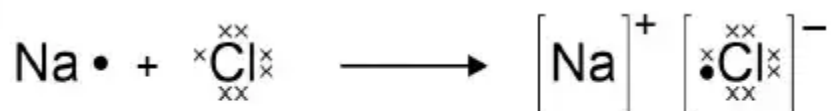
Sodium chloride

Na(11) \Rightarrow 2, 8, 1

K L M

Cl (17) \Rightarrow 2, 8, 7

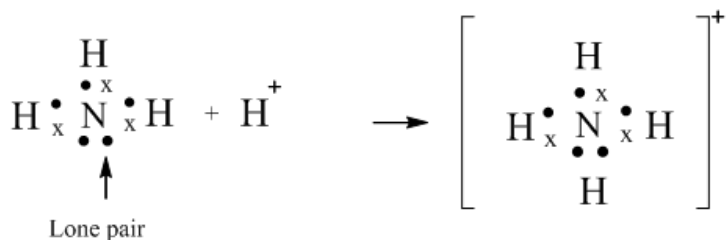
K L M



Sodium donates one electron to chlorine to form a positive ion and chlorine gains one electron to form a negative ion. These ions form an electrovalent bond and are held strongly by electrostatic forces of attraction.

4. Draw the electron dot structure of Ammonium ion [N = 7, H = 1] (2019)

Answer: Ammonia donates its lone pair to proton forming ammonium ion.



5. Ionic compounds have a high melting point. Give reason (2018)

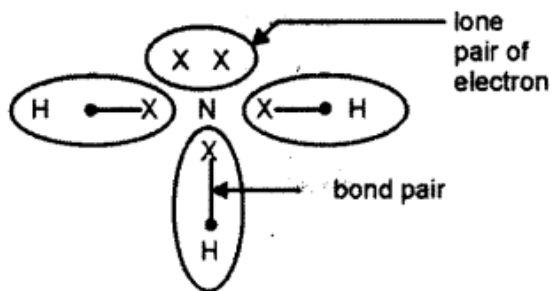
Answer:
Ions of ionic compounds are held strongly by electrostatic forces of attraction. These strong forces require high energy to break the bond. Hence, they have a high melting point.

6. Ionic or electrovalent compounds do not conduct electricity in their state. (fused/solid) (2018)

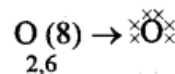
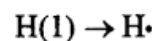
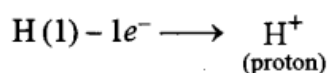
Answer:
Fused

7. (i) What do you understand by a lone pair of electrons ?
(ii) Draw the electron dot diagram of Hydronium ion. (H = 1, O = 8) (2018)

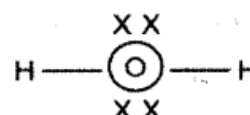
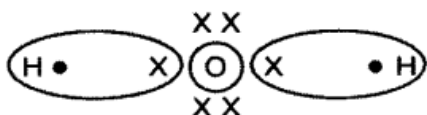
Answer:
(i) The unshared pair of electrons that does not normally take part in a chemical reaction is known as lone pair.
Example:



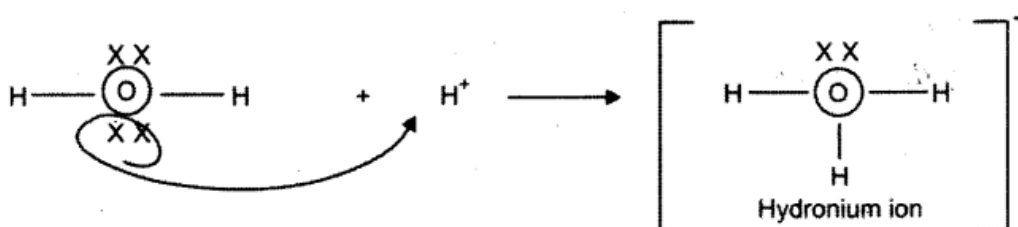
(ii) Hydronium ion
Formation of proton:



Structure of water



Formation of hydronium ion



8. Which one of the following is **not** true of metals:
- (A) Metals are good conductors of electricity
 - (B) Metals are malleable and ductile
 - (C) Metals form non-polar covalent compounds
 - (D) Metal will have 1 or 2 or 3 electrons in their valence shell.

(2010)

Answer:

(C) Metals form non-polar covalent compounds

9. Hydrogen chloride can be termed as a polar covalent compound.

(2011)

Answer:

Difference between electronegativities of H and Cl is high. Electronegativity of Cl is much higher than that of H. So a unidirectional pull towards Cl will be created leading to polarity.

10. In covalent compounds, the bond is formed due to the (sharing /transfer) of electrons.

(2011)

Answer:
sharing

11. Electrovalent compounds have a (low/high) boiling point.

(2011)

Answer:
high

12. A molecule of contains a triple bond (hydrogen, ammonia, nitrogen).

(2011)

Answer:
nitrogen

13. This metal is a liquid at room temperature.

(A) Potassium (B) Zinc
(C) Gold (D) Mercury

(2011)

Answer:
(D) Mercury

14. Match column A with column B.

Column A	Column B
1. Sodium chloride	Increases
2. Ammonium ion	Covalent bond

3. Electronegativity across the period	Ionic bond
4. Non metallic character down the group	Covalent and Coordinate bond
5. Carbon tetrachloride	Decreases

(2010)

Answer:

1. Sodium chloride – Ionic bond.
2. Ammonium ion – Covalent and Coordinate bond.
3. Electronegativity across a period – Increases.
4. Non metallic character down the group – Decreases.
5. Carbon tetrachloride – Covalent bond.

15. The energy required to remove an electron from a neutral isolated gaseous atom and convert it into a positively charged gaseous ion is called (electron affinity, ionisation potential, electronegativity)

(2017)

Answer:

ionisation potential

16. The compound that does not have a lone pair of electrons is (water, ammonia, carbon tetrachloride)

(2017)

Answer:

carbon tetrachloride

17. Which of the following is a common characteristic of a covalent compound?

1. high melting point
2. consists of molecules
3. always soluble in water
4. conducts electricity when it is in the molten state

(2017)

Answer:

2. consists of molecules

18. State the type of Bonding in the following molecules: [2]

- (i) Water
- (ii) Calcium oxide

(2017)

Answer:

- (i) Covalent bonding
- (ii) Ionic bonding

19. Draw an electron dot diagram to show the formation of each of the following compounds: [4]

(i) Methane

(ii) Magnesium Chloride [H = 1, C = 6, Mg = 12, Cl = 17]

(2017)

Answer:

