

Quiz (Covalent Bonding)

- Which of the following elements / compounds consist of molecules?
NaCl, CH₃OH, I₂, KBr, Fe₂O₃, HCl, NaNO₃, NH₄Cl, Ag
- Element X has an electronic arrangement of 2,6. X is a gas at room temperature and pressure and it consists of discrete diatomic molecules.
 - Draw an electron diagram (showing electrons in the outermost shells only) of a molecule of X.
 - What is the bonding that joins the atoms together in the molecule of X? Describe how it forms.
 - Find the number of bond pairs and the number of lone pairs on each atom of X.
- Compound Y forms when nitrogen reacts with chlorine.
 - Draw an electron diagram (showing electrons in the outermost shells only) of a molecule of compound Y.
 - Find the number of bond pairs and the number of lone pairs on the nitrogen atom in the molecule of Y.
 - Write the molecular formula and structural formula of Y.
- Write the formulae of the compounds formed between:

(a) carbon and fluorine	(b) hydrogen and sulphur
(c) phosphorus and hydrogen	(d) silicon and chlorine
- Write the names of the following compounds:

(a) HCl	(b) CO
(c) CO ₂	(d) SO ₂
(e) SO ₃	
- Draw the electron diagram of the compound formed from each of the following pairs of elements. (Assume that each atom in the compound has attained the electronic arrangement of a noble gas.)

(a) Carbon and chlorine	(b) Carbon and sulphur
(c) Hydrogen and bromine	(d) Nitrogen and fluorine
(e) Phosphorus and hydrogen	(f) Silicon and hydrogen

7. Give the molecular formula and the name of the compound formed from each of the following pairs of elements. (Assume that each atom in the compound has attained the electronic arrangement of a noble gas.)

	Constituent elements	Molecular formula of the compound	Name of the compound
(a)	Carbon and oxygen		
(b)	Nitrogen and hydrogen		
(c)	Carbon and fluorine		
(d)	Nitrogen and chlorine		
(e)	Carbon and hydrogen		
(f)	Phosphorus and chlorine		

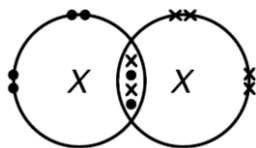
8. You are given the following substances:
chlorine (Cl₂), carbon monoxide (CO), nitrogen (N₂), water (H₂O), sodium chloride (NaCl), oxygen (O₂), helium (He)

- Which of the above are molecular substances?
- Which of the above are covalent compounds?
- Which substances contain covalent bonds?
- Which substance(s) contain(s) ionic bond?

Suggested Answer

1. CH_3OH , I_2 , HCl

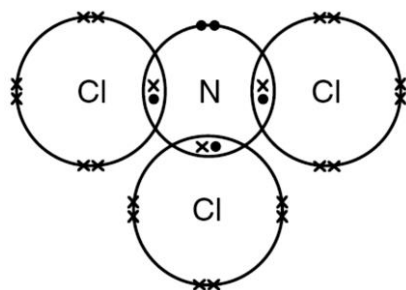
2. (a)



(b) Covalent bonding. It forms when each atom of X contributes two outermost shell electrons for sharing.

(c) There are two bond pairs and two lone pairs on each atom of X.

3. (a)



(b) There are three bond pairs and one lone pair on the nitrogen atom.

(c) Molecular formula: NCl_3



4. (a) CF_4

(b) H_2S

(c) PH_3

(d) SiCl_4

5. (a) Hydrogen chloride

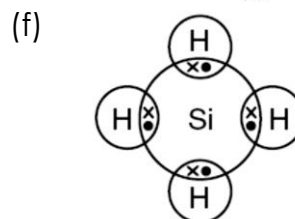
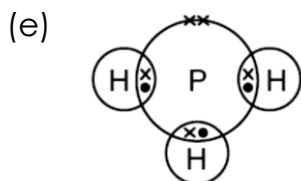
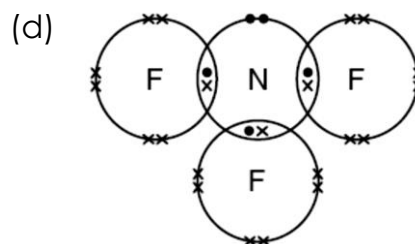
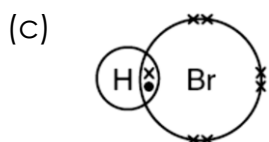
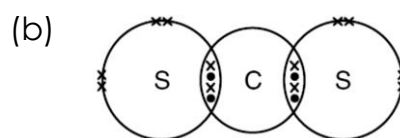
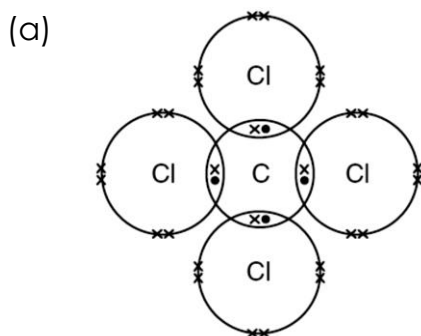
(b) Carbon monoxide

(c) Carbon dioxide

(d) Sulphur dioxide

(e) Sulphur trioxide

6.



7.

	Constituent elements	Molecular formula of the compound	Name of the compound
(a)	Carbon and oxygen	CO₂	Carbon dioxide
(b)	Nitrogen and hydrogen	NH₃	Ammonia
(c)	Carbon and fluorine	CF₄	Carbon tetrafluoride / tetrachloromethane
(d)	Nitrogen and chlorine	NCl₃	Nitrogen trichloride
(e)	Carbon and hydrogen	CH₄	Methane
(f)	Phosphorus and chlorine	PCl₃	Phosphorus trichloride

8. (a) Chlorine, carbon monoxide, nitrogen, water, oxygen, helium
 (b) Carbon monoxide, water
 (c) Chlorine, carbon monoxide, nitrogen, water, oxygen
 (d) Sodium chloride