Science(Chemistry)

Covalent Bonding III

Name: _____( ) Class: _____ Date: _____

1. The electronic structure of a sulphur atom can be written as 2,8,6

   a) Write, in the same way, the electronic structures of the atoms of carbon and oxygen.

   Carbon _____ Oxygen _____

   b) Draw a diagram showing the electron arrangement in a molecule of carbon dioxide.

2. In covalent compounds, atoms share electrons. By sharing electrons, both the bonded atoms gain a full outer shell of electrons. Using the information given, draw the 'dot and cross' diagrams for each of the following covalent compounds.

	Electronic structure		Electronic structure
Hydrogen atom	1	Oxygen atom	2, 6
Carbon atom	2, 4	Chlorine atom	2, 8, 7

   a) A chlorine molecule, Cl_2

   b) A hydrogen chloride molecule, HCl

   c) A water molecule, H_2O

   d) A methane molecule, CH_4

3. Draw 'cross and dot' diagrams to show the covalent bonds in the following compounds:

a) ammonia, NH_3 b) tetrachloromethane, CCl_4

4. The electronic structure of nitrogen is 2, 5. Nitrogen combines with hydrogen to form ammonia.

a) Draw a 'dot and cross' diagram to show the covalent bonds in an ammonia molecule.

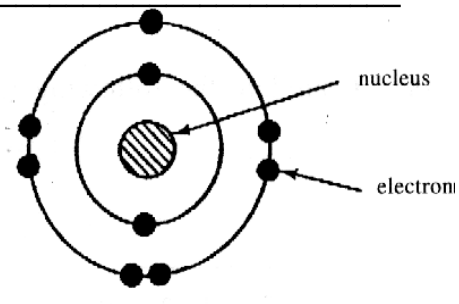
b) What is the valency of nitrogen? _____

c) Give a reason why covalent compounds do not conduct electricity.

_____

_____

5. The diagram shows an atom of mass number 19.



a) Is X a metal or non-metal? _____

Give a reason for your answer.

_____

_____

_____

b) Draw diagrams to show the structures of each of the following:

i) A molecule of the element X.

ii) A molecule of X, which is bonded with hydrogen.

6. The electronic configuration of phosphorus atom is 2, 8, 5.

a) What type of bond is formed between phosphorus and hydrogen? _____

b) How is this type of bond formed?

_____

c) In the reaction between phosphorus and hydrogen, write down the chemical formula for the compound formed. _____