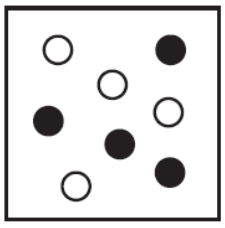
N5 Chemistry
Unit 1: Chemical Changes & Structure
Homework 1.10

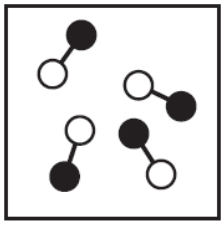
1. An acidic solution contains

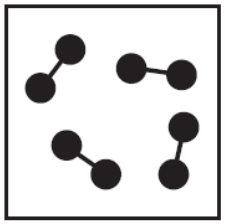
   A only hydrogen ions
   B more hydrogen ions than hydroxide ions
   C more hydroxide ions than hydrogen ions
   D equal numbers of hydrogen ions and hydroxide ions.

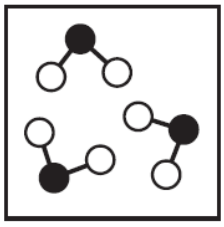
   Answer _____

2. Which of the following diagrams represents a **compound** made up of **diatomic** molecules?

   A 

   C 

   B 

   D 

   Answer _____

3. Which of the following substances is covalent?

   A Sodium chloride
   B Calcium hydroxide
   C Copper carbonate
   D Silicon chloride

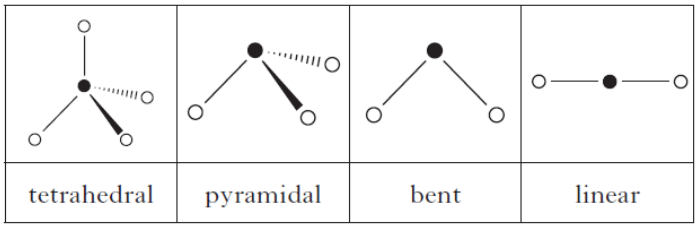
   Answer _____

4. Which of the following oxides will dissolve in water to produce an alkaline solution?
   (You may wish to use page 5 of the data book.)

   A Carbon dioxide
   B Copper(II) oxide
   C Potassium oxide
   D Nitrogen dioxide

   Answer _____

5. The shapes and names of some molecules are shown below.
   Phosphine has a molecular formula PH_3.
   The shape of a molecule of phosphine is likely to be



   A tetrahedral
   B pyramidal
   C bent
   D linear.

   Answer _____

6. Which of the following **increases** when hydrochloric acid is diluted with water?

   A Rate of reaction with magnesium
   B Concentration of H^+
   C Electrical conductivity
   D pH

   Answer _____

7. Covalent substances often exist as molecules where atoms are held together by covalent bonds.

a) What is meant by a covalent bond?

_____ 1

b) Hydrogen gas is made up of diatomic molecules.

i) What is meant by the term diatomic?

_____

_____ 1

ii) Draw a diagram to show how the electrons are arranged in a molecule of hydrogen, H_2.

1

c) Molecules often have a distinct shape.

For each of the following molecules draw a diagram to show the **shape** of the molecule.

i) Methane, CH_4

ii) Nitrogen fluoride, NF_3

iii) Silicon chloride, $SiCl_4$

iv) Hydrogen sulfide, H_2S.

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8. A student investigated how the concentration of sodium chloride in water affected the freezing point.

a) What type of bond is broken in sodium chloride when it dissolves in water?

_____ 1

b) The table shows information about the freezing point of different sodium chloride solutions.

Concentration of sodium chloride solution (mol/l)	0	0·09	0·18	0·27	0·37	0·46
Freezing point (°C)	0	−0·2	−0·5	−0·8	−1·1	−1·5

Describe the relationship between the concentration and freezing point.

_____

_____ 1

c) Predict the freezing point of a 0·55 mol/l sodium chloride solution.

_____ °C 1

9. A student made the following statements about the particles found in an atom.

A	Relative mass = 1
B	Charge = zero
C	Found outside the nucleus
D	Charge = 1+
E	Charge = 1–

a) Which two statements apply to electrons?

_____ & _____ 2

b) Which two statements apply to neutrons?

_____ & _____ 2

10. a) When sulfur dioxide dissolves in water in the atmosphere “acid rain” is produced.

Circle the correct phrase to compete the sentence. 1

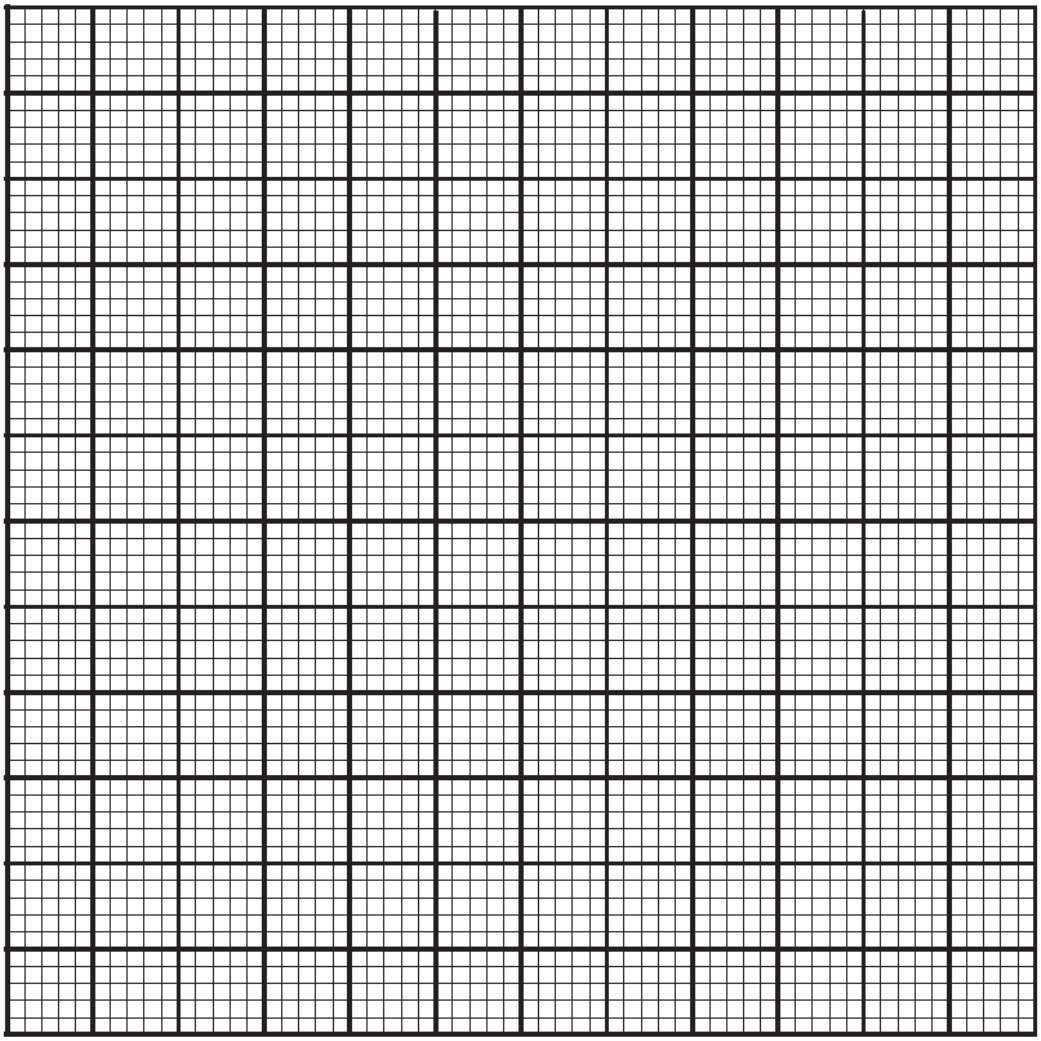
Compared with pure water, acid rain contains { a higher / a lower / the same } concentration of hydrogen ions.

b) The table shows information about the solubility of sulfur dioxide.

Temperature /°C	0	20	30	40	50	60
Solubility in g/100 cm^3	22·0	10·0	6·0	3·0	2·0	1·5

Draw a line graph of solubility against temperature.

Use appropriate scales which fill most of the paper.



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Total Marks 24