

N5 Chemistry
Unit 1: Chemical Changes & Structure
Homework 1.13

1. Which of the following compounds is a base?

- A Sodium chloride
- B Magnesium carbonate
- C Calcium bromide
- D Copper(II) sulfate

Answer _____

2. Which of the following substances has the smallest gram formula mass?

- A CO
- B CO₂
- C N₂
- D CH₄

Answer _____

3. Which of the following compounds is a salt?

- A Copper(II) sulphate
- B Calcium oxide
- C Sodium hydroxide
- D Lithium oxide

Answer _____

4. Which of the following substances will conduct electricity?

- A A covalent gas
- B A covalent liquid
- C An ionic liquid
- D An ionic solid

Answer _____

5. The Roman numeral, III, in iron(III) oxide means that

- A there are three iron ions in the formula
- B each iron ion has a charge of 3-
- C there are two oxide ions in the formula
- D each iron ion has a charge of 3+.

Answer _____

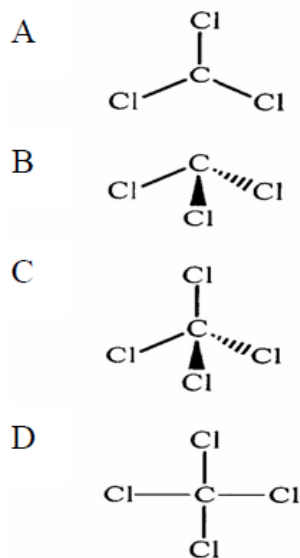
6. When nickel(II) chloride solution is added to sodium carbonate solution an insoluble solid is formed.

A sample of the solid can be separated from the mixture by

- A condensation
- B distillation
- C evaporation
- D filtration.

Answer _____

7. Which of the following diagrams shows the formula and shape of a carbon chloride molecule?



Answer _____

8. Which molecule is diatomic?

- A H₂O
- B CH₄
- C CO
- D SO₂

Answer _____

9. Give the number of moles in each of the following:

a) 1.6 g of methane, CH₄

b) 15 g of calcium carbonate, CaCO₃ _____ moles 2

c) 32 g of sulfur dioxide, SO₂ _____ moles 2

d) 14.8 g of calcium hydroxide, Ca(OH)₂ _____ moles 2

10. For each of the following neutralisation reactions state the products.

a) Calcium oxide reacts with sulfuric acid.
_____ 1

b) Copper(II) oxide reacts with nitric acid.
_____ 1

c) Magnesium carbonate reacts with hydrochloric acid.
_____ 1

d) Sodium carbonate reacts with sulfuric acid.
_____ 1

e) Lithium oxide reacts with hydrochloric acid.
_____ 1

f) Zinc(II) carbonate reacts with nitric acid.
_____ 1

11. Dishwasher tablets contain many different types of chemicals.



- a) A dishwasher tablet was found to contain 1.57 g of bleaching agent, sodium percarbonate. How many moles are there in 1.57 g of sodium percarbonate. (Formula mass of sodium percarbonate = 157)

_____ moles 1

- b) Many dishwasher tablets contain sand which can help to remove food deposits. Sand contains the covalent compound silicon dioxide which has a melting point of 1713°C. Suggest what type of **structure** silicon dioxide has.

_____ 1

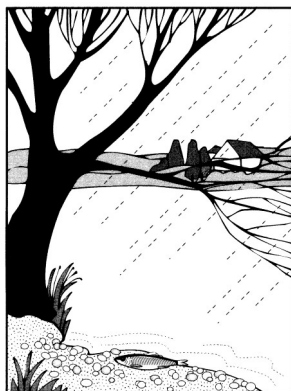
- c) Phosphate ions, present in some types of dishwasher tablets, react with calcium ions in water forming calcium phosphate. Write the formula for calcium phosphate.

_____ 1

12. The Periodic Table groups together elements with similar chemical properties. In most Periodic Tables hydrogen is placed at the top of Group 1 but in some it is placed at the top of Group 7. Using your knowledge of chemistry, comment on the reasons for hydrogen being placed either above Group 1 or Group 7.

3

13. Fish cannot survive in lochs if acid rain makes the pH of the water too low.



a) Name the gas which causes acid rain.

_____ 1

b) Which ion cause the water in the loch to be acidic?

_____ 1

c) Name a substance which could be added to the loch to increase the pH of the water.

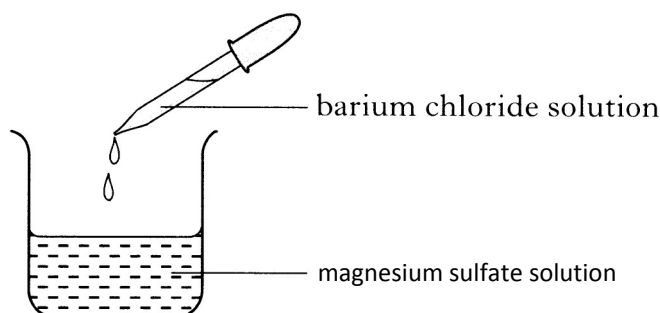
_____ 1

14. Magnesium sulfate is a compound present in Epson salts.

a) A solution can be made by dissolving magnesium sulfate in water.
What term can be used to describe the water?

_____ 1

b) When drops of barium chloride are added to magnesium sulfate solution a solid forms and the mixture turns cloudy.



i) What type of chemical reaction takes place?

_____ 1

ii) Name the solid formed in this reaction.

You may wish to use page 8 of the data booklet to help you.

_____ 1

Total Marks 34