

CHEMISTRY YEAR 10 – FINAL TEST REVISION

NAME _____

PART A:

Use the following relative atomic masses if required.

Al 27 O 16 H 1 C 12 Mg 24 N 14

Avogadro's No is 6.02×10^{23}

1. What is the molecular mass of:
 - a. N_2 28 (1)
 - b. $Al(OH)_3$ 78 (1)
 - c. $MgCO_3$ 84 (1)

2. In 74 g of $Mg(NO_3)_2$
 - a. How many moles of $Mg(NO_3)_2$ are there? 0.5 mol (1)
 - b. How many moles of NO_3 ions are there are? 1 mol (1)
 - c. How many moles of O atoms are present? 3 mol (1)
 - d. What mass of oxygen is present? 48g (1)

4. What number of molecules is present in 1 mole of O_2 gas? 6.02×10^{23} (1)

5. What number of atoms is present in 1 mole of O_2 gas? $12.04 \times 10^{23} = 1.204 \times 10^{24}$ (1)

6. How many moles are present when there are 3×10^{23} particles of any compound? 0.5 mol (1)

PART B:

Use the following relative atomic masses if required.

Al 27 O 16 H 1 C 12 Ca 40 N 14

Avogadro's No is 6.02×10^{23} Molar volume of a gas at STP is 22.4 L

1. Calculate the number of moles of CO_2 gas present at STP in 11.2 L 0.5 mol (1)

2. What is the mass of CO_2 present in 11.2 L? 22g (2)

3. What is the **number** of molecules present in 11.2 L of CO_2 . 3.01×10^{23} (2)

4.
 - a. How many moles of $CaCO_3$ are present 40 g? 0.4 mol (1)
 - b. How many moles of O atoms are present? 1.2 mol (2)
 - c. What mass of oxygen is present? 19.2g (2)
 - d. Which element contributes least to the mass? Carbon (1)

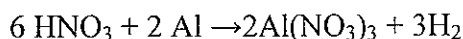
PART C:

Use the following relative atomic masses if required.

O 16 H 1 C 12 Ca 40

Molar volume of a gas at STP is 22.4 L

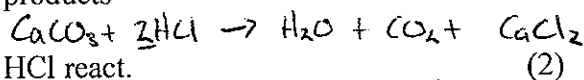
1. Nitric acid and Aluminium combine as shown below in the balanced equation:



When 3 moles of HNO_3 are reacted:

- a. How many moles of Hydrogen are produced 1.5 mol (1)
 b. How many moles of Aluminium are consumed? 1 mol (1)
 c. How many moles of Aluminium Nitrate will form? 1 mol (1)

2. CaCO_3 and HCl react forming CO_2 as one of the products



- a. Write a balanced equation when CaCO_3 and HCl react. (2)
 b. What mass of CO_2 is released when 40g of CaCO_3 is placed in 3 moles of HCl ? * 17.6g (3)
 c. What volume does this CO_2 occupy at STP 8.96 L (2)

* We have 0.4 mol of CaCO_3 so need 0.8 mol HCl (The rest of the HCl has nothing to react with)

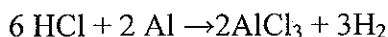
PART D:

Use the following relative atomic masses if required.

O 16 H 1 C 12 Cu 65

Molar volume of a gas at STP is 22.4 L

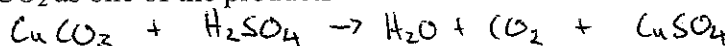
2. Hydrochloric acid and Aluminium combine as shown below in the balanced equation:



When 2 moles of HCl are reacted:

- a. How many moles of Hydrogen gas are produced 1 mol (1)
 b. How many moles of Aluminium are consumed? 0.67 mol (1)
 c. How many moles of Aluminium chloride will form? 0.67 mol (1)

3. CuCO_3 and H_2SO_4 react forming CO_2 as one of the products



- a. Write a balanced equation when CuCO_3 and H_2SO_4 react. (2)
 b. What mass of CO_2 is released when 60g of CuCO_3 is placed in 0.8 moles of H_2SO_4 . (3)* 21.12g
 c. What volume does this CO_2 occupy at STP 10.7 L (2)

* We have 0.48 mol of CuCO_3 so need 0.48 mol of H_2SO_4 .
 The rest of the ~~HCl~~ H_2SO_4 has nothing to react with.