CHEMISTRY REVISION WORKSHEET FIRST TERM YEAR 11

It is very difficult to know the exact composition of the Earth's early atmosphere, whereas we do know the percentage of gases that make up the modern day atmosphere. Look at the data below.

Modern day atmosphere (actual composition)

Gas	Percentage (%)
O_2	21
N_2	78
CO_2	0.04
water vapour	very small
other gases	less than 1%

Early atmosphere (suggested composition)

Gas	Percentage (%)
O_2	0
N_2	10
CO_2	80
water vapour	10
other gases	very small

1 a Describe the differences between the Earth's early atmosphere and the modern day atmosphere.

b Explain as fully as possible what caused the Earth's atmosphere to change over time.

c Name two gases that make up part of the 'other gases' in the modern day atmosphere.

2 **There is increasing concern about the impact that humans are having on the Earth's atmosphere.**

a Name the phenomenon thought to be caused by the increasing amounts of carbon dioxide that are being released into the atmosphere.

b What problems are occurring on Earth because of this phenomenon?

c Describe a test and give the positive result that would be expected when testing for CO_2 gas.

_____

_____

Sulfuric acid, nitric acid and hydrochloric acid are called strong acids and can react with various substances.

2 **a** Give the formula of sulfuric acid.

_____

b **i** Give the name of the salt produced when copper oxide reacts with sulfuric acid.

_____

ii Write the word equation to represent this reaction.

_____

c **i** Give the name of the salt produced when potassium hydroxide reacts with sulfuric acid.

_____

ii Write the word equation to represent this reaction.

_____

iii Write a balanced equation to represent this reaction.

_____

d **i** Name a metal carbonate and an acid which, when reacted together, produce a salt called sodium sulfate.

_____

ii Name the two other products of this reaction.

_____

3 A neutralisation reaction involving dilute nitric acid, HNO3, and slightly soluble magnesium hydroxide, Mg(OH)2, from an indigestion tablet is carried out in a test tube. The nitric acid bottle has a hazard warning symbol on its label.

a Write the balanced symbol equation for the reaction between magnesium hydroxide and nitric acid.

.....

b What would the hazard symbol on this bottle indicate?

.....

c Draw the appropriate hazard symbol that would be on the bottle if the nitric acid were much more concentrated.

METALS

1 Define the term *alloy*.

_____

_____

2 Describe how a ‘smart alloy’ is different from a standard alloy such as mild steel.

_____

_____

_____

_____

3 **a** Draw lines to match each alloy with its mixture of elements.

nitinol	copper and zinc
brass	iron, carbon, chromium and nickel
solder	copper, zinc and aluminium
stainless steel	titanium and nickel
CuZnAl	copper and tin
Bronze	lead and tin

b Make a list of the alloys in the table that are classed as ‘smart alloys’.

_____

_____

c Give some common uses of the following alloys:

i nitinol _____

_____

ii stainless steel _____

_____

_____

4 Describe and explain how alloying changes the properties of metals.

_____

_____

_____

_____

ORGANIC

1 Define the term ‘hydrocarbon’.

_____

_____

2 Explain the difference between a saturated hydrocarbon and an unsaturated hydrocarbon.

_____

_____

3 Alkanes are classed as hydrocarbons. An example of an alkane is propane, C_3H_8, which is a fuel that can be used for gas barbeques. Propane is found as part of the gases fraction in crude oil.

a Explain the term ‘fraction’.

_____

_____

b Name two other fractions that are obtained from crude oil.

_____

c Describe and explain, in as much detail as possible, how crude oil is separated into fractions.

_____

_____

_____

_____

_____

d i Write a word equation to represent the complete combustion of propane when being used by a gas barbeque.

_____

ii Write a balanced equation to represent the complete combustion of propane when being used by a gas barbeque.

_____

e A faulty gas barbeque can be very dangerous because incomplete combustion can occur, especially in an enclosed and poorly ventilated space.

i Name the toxic, odourless gas that can be produced during incomplete combustion.

_____

ii Write a balanced equation, including state symbols, that shows propane undergoing incomplete combustion to form this gas.

_____

Polymers are very useful materials that have a wide range of applications. Poly(propene) is an example of a polymer that is made from propene.

a Draw the structure of a propene molecule.

b Give the name of the family of compounds to which propene belongs.

.....

c Describe and explain a chemical test you could use to distinguish propene from propane.

.....

.....

d Explain how polymers such as poly(propene) are produced. Use some of these keywords:

monomer **polymer** **unsaturated** **double bond**
polymerisation **reactive** **saturated**

.....

.....

.....

.....

.....

2 Complete the table by filling in the empty cells. For the uses of each polymer, choose from the following:

ropes and crates **plastic bags and washing up bowls**
window frames and records **non-stick pans**

Name of monomer	Name of polymer	Uses
Ethene		
Propene	Poly(propene)	
Chloroethene		
Tetrafluoroethene		

IONS

Two solutions, **Y** and **Z**, were analysed.

Solution **Y** was aqueous iron (III) bromide. Tests were carried out on both solutions.

tests on solution Y Complete the expected observations.

The solution was divided into two equal portions in two test-tubes.

(a) (i) A few drops of aqueous sodium hydroxide were added to the first portion of solution **Y** and the test-tube shaken to mix the solutions.

observations ..... **[2]**

(ii) An excess of aqueous sodium hydroxide was then added to the mixture.

observations..... **[1]**

(iii) The mixture from **(a)(ii)** was poured into a boiling tube for identification of bromide ion.

Name the two reagents student should add to identify bromide ion:

…….and …….

State the observations:..... **[3]**

(b) Identify the precipitate produced in **(a)(iii)**.

..... **[1]**

(c) Write ionic equation with state symbols for the reaction in part (iii)

…… **[2]**

tests on solution Z

Tests were carried out and the following observations made.

Tests on solution Z	Observations
Solution Z was divided in three equal portions in three test tubes. Test 1 pH of first portion was tested.	pH 10
Test 2 Few drops of sodium hydroxide were added to second portion and the solution was heated.	the gas produced turned by moist red litmus blue

(d) (i) Identify gas produced in test 2.

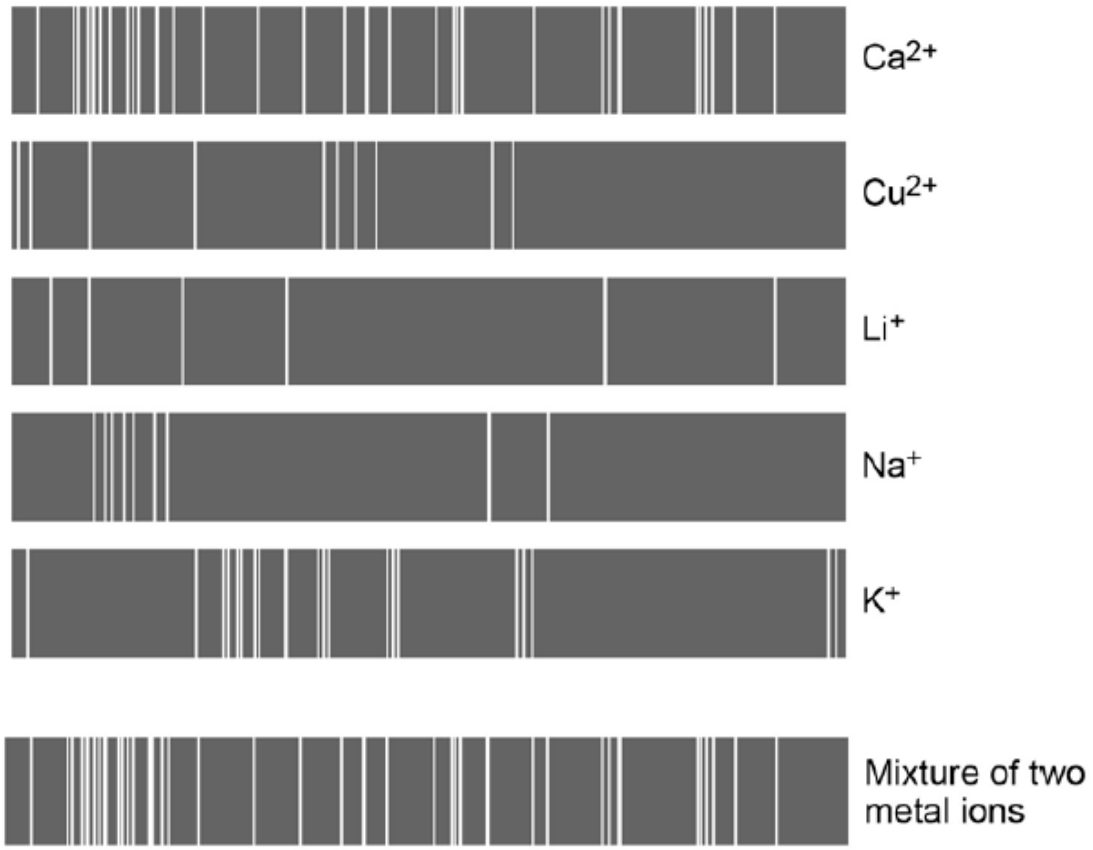
..... **[1]**

(ii) Identify solution **Z**.

..... **[1]**

(e) Flame emission spectroscopy can be used to analyse metal ions in solution.

Figure below gives the flame emission spectra of five metal ions, and of a mixture of two metal ions.



Use the spectra to identify the **two** metal ions in the mixture.

Explain why a flame test could **not** be used to identify the two metal ions in the mixture **[2]**

……

……

……

(f). A student carried out a series of tests on a solid, **M**, in order to identify the ions that could be present. The table shows her results.

Test	Method	Result
Test 1	Carry out a flame test on solid **M**	Lilac flame
Test 2	Dissolve solid **M** in water, and divide the solution into three portions, A, B and C	
	Portion A – add dilute sodium hydroxide solution	Green precipitate
	Portion B – add dilute hydrochloric acid, then barium chloride solution	No change
	Portion C – add dilute nitric acid, then silver nitrate solution	Yellow precipitate

Identify the ion responsible for **[3]**

(i) the lilac colour in the flame test……..

(ii) the green precipitate when sodium hydroxide solution was added……

(iii) the yellow precipitate when silver nitrate solution was added……..……..

(iv) Describe how the student should carry out a flame test on solid **M.** **[2]**

.....

.....

.....

.....

.....

.....