







## ASSIGNMENTS

### Grade 9

		
<b>GRADE:IGCSE YEAR 1</b>	SUBJECT:CHEMISTRY	DATE: 27 MAR 2020
<b>WORKSHEET NUMBER: 1</b>	WORKSHEET TOPIC: EARTH'S ATMOSPHERE AND ITS COMPOSITION	
<b>INSTRUCTION (IF ANY ):</b>	DO THE ANSWERS IN NOTEBOOK.	

#### Questions To Do:

- Clean dry air mainly contains nitrogen and oxygen.
  - Name two gases that are in clean dry air.
  - Identify three gaseous pollutants in air and state how each of these pollutants are produced?
  - Describe the Haber process giving reactions conditions and a chemical equation.
  - Write one use of ammonia.
- Three common pollutants in the air are carbon monoxide, the oxides of nitrogen and unburnt hydrocarbons. They all are emitted by motor vehicles.
  - Describe how the oxides of nitrogen are formed.
  - Describe how a catalytic convertor reduces the emission of these three pollutants.
  - Explain why lead compounds are harmful.
- Why are light bulbs filled with argon.

		
<b>GRADE:IGCSE YEAR 1</b>	SUBJECT:CHEMISTRY	DATE: 27 MAR 2020
<b>WORKSHEET NUMBER: 2</b>	WORKSHEET TOPIC: EFFECTS OF AIR POLLUTION	
<b>INSTRUCTION (IF ANY ):</b>	DO THE ANSWERS IN NOTEBOOK.	

1. Carbon and sulfur are contained in fossil fuels. When the fossil fuels are burned these elements are oxidised to carbon dioxide and sulfur dioxide. These products are released to the atmosphere.

Describe how the carbon dioxide released contributes to global warming.

Describe the harmful effects caused by releasing sulfur dioxide to the atmosphere.

2.The table shows the percentage of carbon dioxide in three planets A,B and C in the solar system.

Planet                      % carbon dioxide

A                              96

B                              0.03

C                              95




(a)State which planet is Earth? Give reason.

(b)On Earth, volcanoes emit many gases, including sulphur dioxide, into the atmosphere. Explain why rain which falls through air polluted by sulphur dioxide may cause damage to the walls of stone buildings.

3. The use of motor vehicles causes increased levels of the pollutant carbon monoxide, especially in large cities. Explain briefly why the use of motor vehicles causes increased levels of carbon monoxide.

(a) Explain why high levels of carbon monoxide in cities are undesirable.

(b) One of the other gases in the Earth's atmosphere is argon, Ar. Explain briefly why argon in the atmosphere is not harmful to humans.

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GRADE:IGCSE YEAR 1	SUBJECT:CHEMISTRY	DATE: 11 APR 2020
WORKSHEET NUMBER:3	WORKSHEET TOPIC:WATER CONSERVATION AND PURIFICATION	
INSTRUCTION (IF ANY):	DO THE ANSWERS IN YOUR NOTEBOOK	

1. Polluted air contains two oxides of carbon and two oxides of Nitrogen.

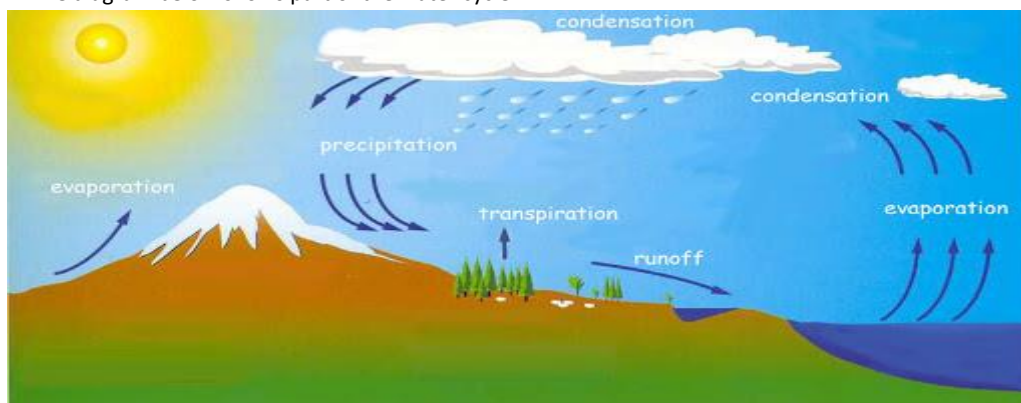
- (i) State one environmental problem caused by Nitrogen dioxide.
- (ii) Explain how oxides of nitrogen, such as Nitrogen dioxide, are formed in car engines.
- (ii) State one adverse effect of each of these gases on environment.

2. State a use for each of the following gases:

- (i) Chlorine
- (ii) argon
- (iii) oxygen
- (iv) ethane

3. Predict the possible adverse effect on the environment when a non-metal,  $\text{NO}_2$ , reacts with water and oxygen.

4. The diagram below shows part of the water cycle.






(i) State the name of each of the following changes of state.

- $\text{H}_2\text{O}(\text{l}) \rightarrow \text{H}_2\text{O}(\text{g})$  Name:
- $\text{H}_2\text{O}(\text{g}) \rightarrow \text{H}_2\text{O}(\text{l})$  Name:

(ii) Which one of the above changes of state is exothermic? Explain your choice.

(iii) The rain drains into rivers and then reservoirs. Describe how water is treated before it enters the water supply.

5. Fish live in water which is neutral (neither acidic nor alkaline). Acid rain decreases the pH of water in lakes and rivers. Both the bases, calcium oxide and calcium carbonate, can neutralise this acid and increase the pH. Explain why calcium carbonate is a better choice.

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GRADE:IGCSE YEAR 1	SUBJECT:CHEMISTRY	DATE: 18 APR 2020
WORKSHEET NUMBER:4	WORKSHEET TOPIC:CLASSIFICATION OF ELEMENTS	
INSTRUCTION (IF ANY):	<a href="https://youtu.be/2aRwnYp4EMc">https://youtu.be/2aRwnYp4EMc</a>	

better choice.

1. Rubidium is the element of group 1.

- (a) Predict how many electrons are there in the outer shell of Rubidium.

- (b) Predict one physical property of Rubidium which is same as that of iron.  
 (c) Predict two physical properties of Rubidium which are different as that of iron.

2. Study the variation in the atomic radii of elements given below and arrange them in the increasing order.

Na      Li      Rb      Cs      K

186      152      246      262      231

- (a) Name the element which has the smallest and the largest atomic size.  
 (b) How does the atomic size vary as we go down the group.

3. Period 3 of the Periodic Table is shown.




Sodium	Magnesium	Aluminium	Silicon	Phosphorus	Sulphur	Chlorine	argon
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Answer the following questions using only these elements.  
 Each element may be used once, more than once or not at all.

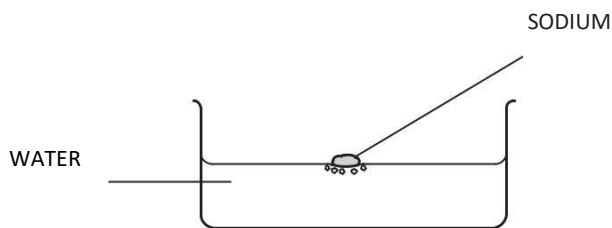
State which element:

- (a) is a gas at room temperature and pressure  
 (b) forms a basic oxide with a formula of the form  $X_2O$   
 (c) is made of atoms which have a full outer shell of electrons  
 (d) forms an oxide which causes acid rain  
 (e) is extracted from bauxite  
 (f) forms an oxide which has a macromolecular structure  
 (g) consists of diatomic molecules.

4. Explain how does the atomic size of elements vary while  
 (a) moving down the group  
 (b) moving left to right across the period

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GRADE: IGCSE YEAR 1	SUBJECT: CHEMISTRY	DATE: 28 APR 2020
WORKSHEET NUMBER: 5	WORKSHEET TOPIC: GROUP II ELEMENTS AND TRANSITION ELEMENTS	
INSTRUCTION (IF ANY):	<a href="https://youtu.be/ZHRdMUXCkva">https://youtu.be/ZHRdMUXCkva</a>	

- The group 1 metals show trends in both their physical and chemical properties.
  - How do their melting points vary down the group.
  - Which element in the group has the highest density.
  - Complete the following reaction:  
 Rubidium + water  $\rightarrow$  \_\_\_\_\_ + \_\_\_\_\_
- Caesium is an alkali metal. It is in Group I of the periodic table.
  - State two physical properties of caesium.
  - State the number of valence electrons in the outer shell of caesium atom.
  - Write the word equation for the reaction of caesium with water.
- Chromium is a transition element. State two differences between physical and chemical properties of chromium and sodium.
- (a) A student observes what happens when a piece of sodium is added to water, as shown in Fig. 4.1

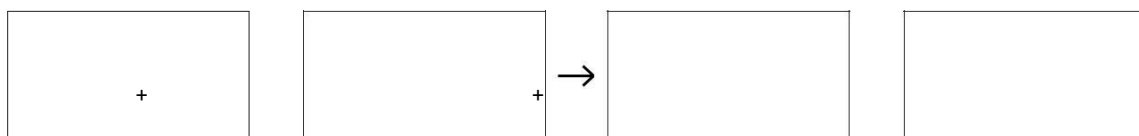


During the reaction the student observes that the sodium floats and melts.

The student is told that sodium hydroxide solution is formed and hydrogen gas is given off.

(i) State which information above shows that sodium has a low density.

(ii) Complete the **word** equation for this reaction.



(iii) The student makes different observations when a piece of copper is added to water. Describe these different observations.

5. The Periodic Table contains groups and collections of elements.

(i) Name the collection of metals which often act as catalysts.

(ii) Describe the reactivity of the noble gases.

6. The chemical symbols of some elements are shown below.

Al      Fe      K      I      Ne      P      S

Choose one of the symbols from the list which shows one atom of:

- (i) potassium .....  
.....
- (ii) an element in the same group of the Periodic Table as oxygen .....  
.....
- (iii) an element with eight electrons in its outer shell .....  
.....
- (iv) a transition metal .....  
.....
- (v) an element that normally exists as diatomic molecules .....  
.....



4. Which two elements react together to form a covalent compound?

element	electronic structure
P	2,4
Q	2,8
R	2,8,1
S	2,8,7

A. R and S

B. P and S

C. Q and R

D. P and R

5. The diagram below shows the elements in a period of the periodic table.

Na	Mg	Al	Si	P	S	Cl	Ar
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(a) To which period of the periodic table does these element belong to?

(b) Answer these question using only the elements shown in the diagram .Write down the symbol of the element which:

(i)has six electrons in its outer shell. (ii)is a halogen.




(iii)is a metal which reacts with cold water. (iv)is in group II of the periodic table.

(v) is a noble gas

(vi) alloy is used in making types of aircrafts

6. Write the reactions of lithium, sodium and potassium with water. In your description, write about the difference in reactivity of the metals. Also write your observations with the help of chemical equation for each.

7. Explain redox reaction by giving an example.

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GRADE:IGCSE YEAR 1	SUBJECT:CHEMISTRY	DATE: 21 MAY 2020
WORKSHEET NUMBER:7	WORKSHEET TOPIC:GROUP II ELEMENTS AND HALOGENS	
INSTRUCTION (IF ANY ):	DO THE ANSWERS IN YOUR NOTEBOOK	

1. Iron is a good conductor, malleable and magnetic. What type of element is Iron?

- (a)Metal
- (b)Nonmetal
- (c)Metalloid
- (d)Pretty

2. Silicon is a semiconductor and has properties of both metals and nonmetals. What type of element is Silicon?

- (a)Metal
- (b)Nonmetal
- (c)Metalloid
- (d)Pretty

3. Which elements are found on the left to middle of The Periodic Table?

- (a)Metals
- (b)Nonmetals
- (c)Metalloids
- (d)Candles

4. Which elements are found on the right side of The Periodic Table?

- (a)Metals
- (b)Nonmetals
- (c)Metalloids
- (d)Water

5. Which of these properties describe metals except...

- (a)malleable
- (b)conductors
- (c)brittle
- (d)shiny

6. Which element is a metalloid?

- (a) Titanium
- (b) Selenium
- (c) Potassium
- (d) Polonium

7. Which element is least likely to conduct heat and electricity?

- (a) Oxygen
- (b) Si
- (c) Po
- (d) Ca

8. How is Selenium classified?

- (a) Metal
- (b) Nonmetal
- (c) Metalloid
- (d) Sedimentary




9. Which of the given choices correctly shows the three main groups of elements listed from least conductivity to greatest conductivity?

- (a) Metals, Nonmetals, Metalloids
- (b) Nonmetals, Metalloids, Metals
- (c) Metalloids, Metals, Nonmetals
- (d) Nonmetals, Metals, Metalloids




10. Which elements are known as catalysts?

- (a) Group 1 element
- (b) Group II element
- (c) Halogens
- (d) Transition elements



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<b>GRADE:IGCSE YEAR 1</b>	<b>SUBJECT:CHEMISTRY</b>	<b>DATE: 22 JUN 2020</b>
<b>WORKSHEET NUMBER:8</b>	<b>WORKSHEET TOPIC: Elements and Compounds</b>	
<b>INSTRUCTION (IF ANY ):</b>	<b>DO THE ANSWERS IN YOUR NOTEBOOK</b>	

1. How does molten sodium chloride conduct electricity?
2. Why does sodium chloride does not conduct electricity when it is in solid form?
3. Why do molecular crystals never conduct electricity?
4. Why can metals conduct electricity?
5. How is the structure of silicon(iv) oxide similar to that of diamond?

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<b>GRADE:IGCSE YEAR 1</b>	<b>SUBJECT:CHEMISTRY</b>	<b>DATE: 25 JUN 2020</b>
<b>WORKSHEET NUMBER:9</b>	<b>WORKSHEET TOPIC: Elements and Compounds</b>	
<b>INSTRUCTION (IF ANY):</b>	<b>DO THE ANSWERS IN YOUR NOTEBOOK</b>	

**End of Chapter Questions**

**Page 241-243**

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<b>GRADE:IGCSE YEAR 1</b>	<b>SUBJECT:CHEMISTRY</b>	<b>DATE: 30 JUN 2020</b>
<b>WORKSHEET NUMBER:10</b>	<b>WORKSHEET TOPIC: The nature of matter</b>	
<b>INSTRUCTION (IF ANY):</b>	<a href="https://youtu.be/x2My3YgC5OY">https://youtu.be/x2My3YgC5OY</a>	

1. Give the names for the following physical changes:
  - (a)liquid to solid
  - (b)liquid to gas at a precise temperature
  - (c)gas to liquid
  - (d)solid to gas directly
  
2. What effect does the presence of an impurity have on the freezing point of a liquid?
3. Sketch a cooling curve for water from 80°C to -20°C ,noting what is taking place in the different regions of the graph.
4. What do you understand by the term “volatile”?
5. Put these three liquids in order of volatility,with the most volatile liquid first:water (b.p.100°C),ethanoic acid(b.p.128°C), ethanol(b.p.78°C) .

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<b>GRADE:IGCSE YEAR 1</b>	<b>SUBJECT:CHEMISTRY</b>	<b>DATE: 07 JULY 2020</b>
<b>WORKSHEET NUMBER:11</b>	<b>WORKSHEET TOPIC: The nature of matter</b>	
<b>INSTRUCTION (IF ANY):</b>	<a href="https://youtu.be/yxblG8ov6UI">https://youtu.be/yxblG8ov6UI</a>	

1. (a) Summarise the differences between the three states of matter in terms of the arrangement of the particles and their movement.

(b) Define sublimation. Write two examples of sublimates..

2. Which statement describes a mixture?

A It contains molecules made from the same type of atom.

B It contains only one type of atom.

C It contains two different types of atom joined by chemical bonds.

D It contains two different types of atom that can be separated by physical processes.

3. Suggest a suitable method to separate the components of these mixtures:

(i) a volatile and non-volatile component

(ii) two volatile components with appreciable difference in boiling points.




(iii) two immiscible liquids.

(iv) one of the components changes directly from solid to gaseous state.

(v) two or more coloured constituents soluble in some solvent.

(vi) sugar crystals from sugar solution.

4. Define the term **R<sub>f</sub> value** in connection with chromatography.

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<b>GRADE:IGCSE YEAR 1</b>	<b>SUBJECT:CHEMISTRY</b>	<b>DATE: 09 JULY 2020</b>
<b>WORKSHEET NUMBER:12</b>	<b>WORKSHEET TOPIC: Atoms and molecules</b>	
<b>INSTRUCTION (IF ANY ):</b>	<b>Do the answers in your notebook and upload them on google classroom.</b>	

1. Define an element, compound and mixtures.
2. Summarise the differences between the three states of matter in terms of the arrangement of the particles and their movement.
3. Which gas diffuses faster, ammonia or hydrogen chloride? Briefly describe an experiment that demonstrates this difference.
4. Which gas will diffuse fastest of all?
- 5.

The structure of four particles is described in the table.

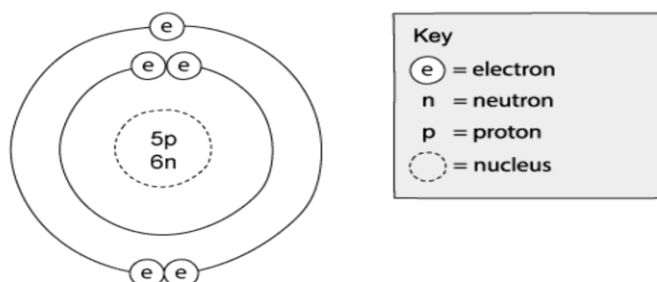
Particle	Number of protons	Number of neutrons	Number of electrons
Li	3	X	3
Li <sup>+</sup>	3	4	2
F	Y	10	9
F <sup>-</sup>	9	10	Z

What are the correct values for X, Y and Z?

	X	Y	Z
A	4	7	9
B	3	9	9
C	4	9	10
D	3	7	10




6.

The diagram shows the atomic structure of an element.






Which element is it?

- A Carbon
- B Beryllium
- C Oxygen
- D Boron

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<b>GRADE:IGCSE YEAR 1</b>	<b>SUBJECT:CHEMISTRY</b>	<b>DATE: 14 JULY 2020</b>
<b>WORKSHEET NUMBER:12</b>	<b>WORKSHEET TOPIC: Atoms and molecules</b>	
<b>INSTRUCTION (IF ANY ):</b>	<b>Do the answers in your notebook and upload them on google classroom.</b>	

1. How many protons, neutrons and electrons are there in an atom of phosphorus, which has a proton number of 15 and a nucleon number of 31?
2. What are the relative masses of a proton, neutron and electron, given that a proton has a mass of 1?
3. What are the maximum numbers of electrons that can fill the first and second shells of an atom?
4. What is the electron arrangement of a calcium atom, which has an atomic number of 20?
5. How many electrons are there in the outer shells of the atoms of the noble gases, argon and neon?
6. Carbon-12 and carbon -14 are different isotopes of carbon .How many electrons are there in an atom of each isotope?

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<b>GRADE:IGCSE YEAR 1</b>	<b>SUBJECT:CHEMISTRY</b>	<b>DATE: 04 AUG 2020</b>
<b>WORKSHEET NUMBER:14</b>	<b>WORKSHEET TOPIC: Chemical reactions</b>	
<b>INSTRUCTION (IF ANY ):</b>	<b>Do the answers in your notebook and upload them on google classroom.</b>	

1. Write differences between physical and chemical change.

2. What is the most important thing that shows us that a chemical reaction has taken place.

3. Write word equation for the following reactions:

(i) Iron rusts when it reacts with oxygen

(ii) sodium hydroxide neutralise sulphuric acid to form sodium sulphate and water.

(iii) sodium reacts strongly with water to give a solution of sodium hydroxide.

(iv) When sodium metal reacts with iron (II) chloride, iron metal and sodium chloride are formed.

(v) When beryllium chloride reacts with silver nitrate in water, aqueous beryllium nitrate and silver chloride powder are made.

4. Balance the following chemical equations:

(i)  $\text{Cu} + \text{O}_2 \rightarrow \text{CuO}$




(ii)  $\text{N}_2 + \text{H}_2 \rightarrow \text{NH}_3$

(iii)  $\text{Na} + \text{O}_2 \rightarrow \text{Na}_2\text{O}$

(iv)  $\text{NaOH} + \text{H}_2\text{SO}_4 \rightarrow \text{Na}_2\text{SO}_4 + \text{H}_2\text{O}$




(v)  $\text{Al} + \text{Cl}_2 \rightarrow \text{AlCl}_3$

(vi)  $\text{Fe} + \text{H}_2\text{O} \rightarrow \text{Fe}_3\text{O}_4 + \text{H}_2$

 <b>Cambridge Assessment International Education</b>		
<b>GRADE:IGCSE YEAR 1</b>	<b>SUBJECT:CHEMISTRY</b>	<b>DATE: 13 AUG 2020</b>
<b>WORKSHEET NUMBER:15</b>	<b>WORKSHEET TOPIC: Chemical reactions</b>	
<b>INSTRUCTION (IF ANY ):</b>	<b>Do the answers in your notebook and upload them on google classroom.</b>	

1. Write difference between displacement and double displacement reaction with one example of each.
2. Why respiration is considered as exothermic reaction.
3. (a)The electrolysis of conc. aqueous sodium chloride can be represented by the following word equation.  
sodium chloride + water → sodium hydroxide + hydrogen + chlorine  
Construct a chemical equation to represent this reaction  
(b)State one use of :  
chlorine  
sodium hydroxide  
hydrogen
4. C 4.09 (a,b) Pg 254



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<b>GRADE:IGCSE YEAR 1</b>	<b>SUBJECT:CHEMISTRY</b>	<b>DATE: 18 AUG 2020</b>
<b>WORKSHEET NUMBER:16</b>	<b>WORKSHEET TOPIC: Chemical reactions</b>	
<b>INSTRUCTION (IF ANY ):</b>	<b>Do the answers in your notebook and upload them on google classroom.</b>	

In text questions of Science course book

Pg 252 and 254

C 4.06 –C 4.10