







ASSIGNMENTS
GRADE 10

 Cambridge Assessment International Education		
GRADE:IGCSE YEAR 2	SUBJECT:CHEMISTRY	DATE: 26 MAR 2020
WORKSHEET NUMBER:1	WORKSHEET TOPIC: Patterns and properties of Metals	
INSTRUCTION (IF ANY):	DO THE ANSWERS IN YOUR NOTEBOOK	




- 1) Name two metals which do not react with oxygen.
- 2) Name two metals which catch fire if kept in open air.
- 3) Give the reaction if any when the following metals are treated with copper sulphate solution;
(i) Pt (ii) Zn (iii) Ag
- 4) Name the three metals which do not react with water at all.
- 5) Write the chemical equation to represent the reaction taking place between potassium metal and cold water
- 6) Give reasons:
 - a) Ionic compounds have high melting point.
 - b) Ionic compounds are hard crystalline solids.
- 7) Metals at the top of the activity series do not occur in the Free State. Explain.
- 8) An atom X has seven valence electrons and another atom Y has two valence electrons. Write the formula of the compound formed between X and Y. Also predict the type of bond formed between them.
- 9) What happens when:
 - A) Iron nail is placed in silver nitrate solution
 - B) Iron strip is dipped in zinc sulphate solution

 Cambridge Assessment International Education		
GRADE:IGCSE YEAR 2	SUBJECT:CHEMISTRY	DATE: 2 APR 2020
WORKSHEET NUMBER:2	WORKSHEET TOPIC: Periodic table	
INSTRUCTION (IF ANY):	DO THE ANSWERS IN YOUR NOTEBOOK	

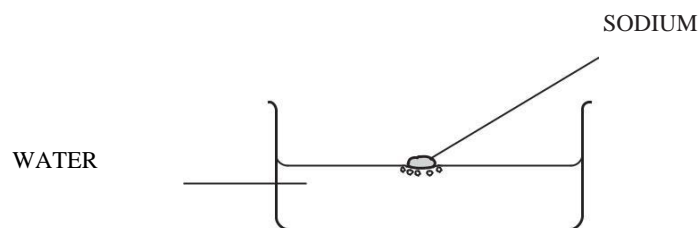
- Rubidium is the element of group 1.
 - Predict how many electrons are there in the outer shell of Rubidium.
 - Predict one physical property of Rubidium which is same as that of iron.
 - Predict two physical properties of Rubidium which are different as that of iron.
- The group 1 metals show trends 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 _____ + _____
- 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

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

 Cambridge Assessment International Education		
GRADE:IGCSE YEAR 2	SUBJECT:CHEMISTRY	DATE: 09 APR 2020
WORKSHEET NUMBER:3	WORKSHEET TOPIC:GROUP II ELEMENTS AND TRANSITION ELEMENTS	
INSTRUCTION (IF ANY):	DO THE ANSWERS IN YOUR NOTEBOOK	

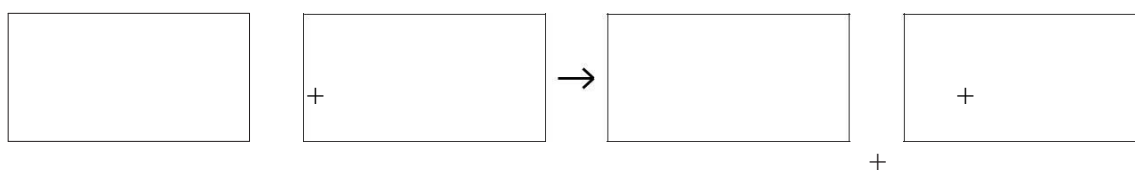
- Caesium is an alkali metal. It is in Group I of the periodic table.
 - State two physical properties of caesium.
 - State the number of valence electrons in the outer shell of caesium atom.
 - Write the word equation for the reaction of caesium with water.
- Chromium is a transition element. State 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. 3.1.



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.

- State which information above shows that sodium has a low density.
- Complete the **word** equation for this reaction.



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

4. 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.

(iii) Chlorine, CL , is in Group VII of the Periodic Table. An atom of chlorine is represented as:



The mass number is 35, and the atomic number is 17.

Explain what is meant by

mass number and atomic number.

5. 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
.....

6. (a) Bohrium is a recently discovered element. The chemical symbol for bohrium is



(i) State the number of protons and the number of neutrons in the nucleus of this atom.

number of protons

number of neutrons

(ii) A compound of bohrium contains one atom of bohrium, three atoms of oxygen and one atom of chlorine in its molecules. Write the chemical formula of this compound. Write the chemical formula of this compound.

(b) Fig. 6.1 shows part of the Periodic Table. Some elements are represented by letters. These letters are **not** the chemical symbols of the elements.

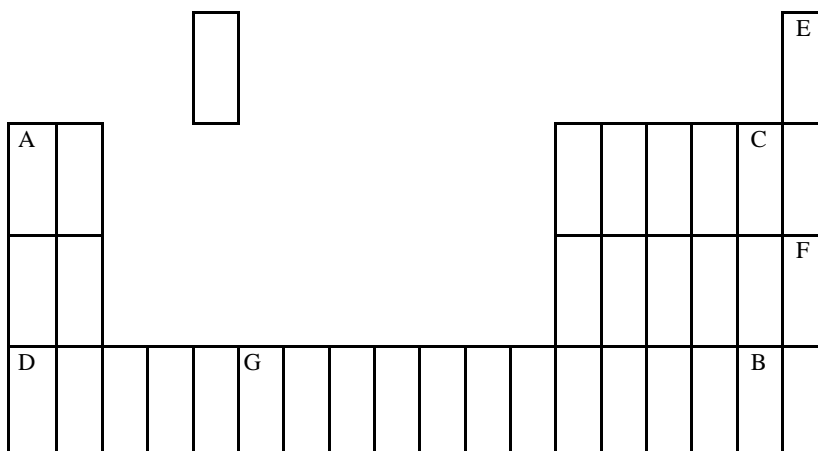


Fig. 6.1

Using only the letters shown in Fig. 6.1, choose the element that is described in each case below. Each letter may be used once or not at all.

a transition metal.....

an element in Group 7 and the Fourth Period.....

the more reactive element in Group I.....

7. Table 7.1 gives some facts about the element astatine and its position in the Periodic Table.

Table 7.1

element	Period	Group	proton number
astatine	6	VII	85

From the information in Table 7.1, deduce the number of electrons in the outer shell of an astatine atom. Explain your answer.

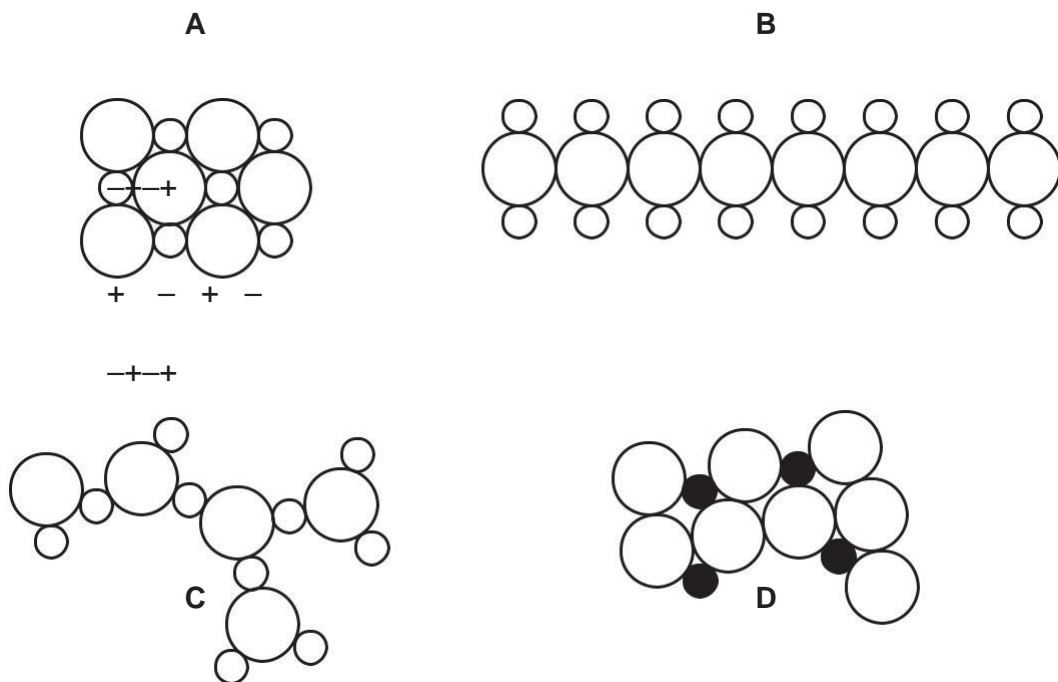
27 Aluminium is an important metal with many uses. Some of its properties are listed.

- 1 It is a good conductor of heat.
- 2 It has a low density.
- 3 It has an oxide layer that prevents corrosion.

Which set of properties help to explain the use of aluminium for cooking and storing food?

- A** 1 only **B** 1 and 2 only **C** 2 and 3 only **D** 1, 2 and 3

28 Which diagram could represent the structure of an alloy?



29 The table shows the results of adding three metals, P, Q and R, to dilute hydrochloric acid and to water.

metal	dilute hydrochloric acid	water
P	hydrogen produced	hydrogen produced
Q	no reaction	no reaction
R	hydrogen produced	no reaction

What is the order of reactivity of the metals?

	most reactive → least reactive		
A	P	R	Q
B	P	Q	R
C	R	Q	P
D	R	P	Q

30 The table gives the composition of the atmosphere of four newly discovered planets.

planet	composition of atmosphere
W	argon, carbon dioxide and oxygen
X	argon, nitrogen and oxygen
Y	argon, carbon dioxide and methane
Z	methane, nitrogen and oxygen

On which planets is the greenhouse effect likely to occur?

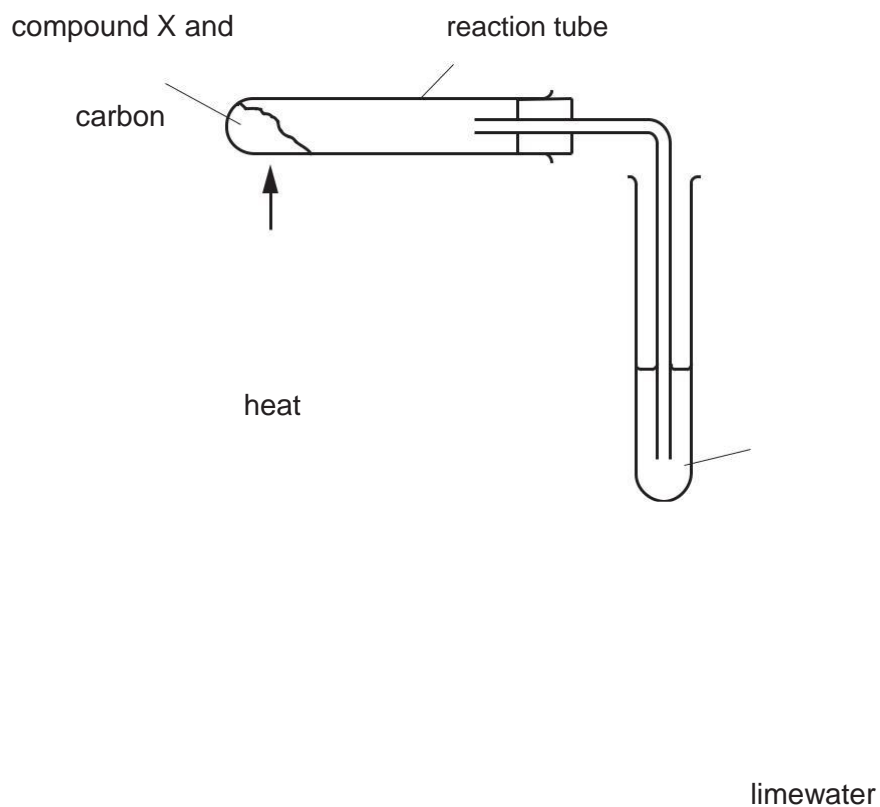
8 W only

8 W, X and Z

8 W and Y only

8 W, Y and Z

(iii) Compound X is heated with carbon using the apparatus shown.



A brown solid is formed in the reaction tube and the limewater turns cloudy.

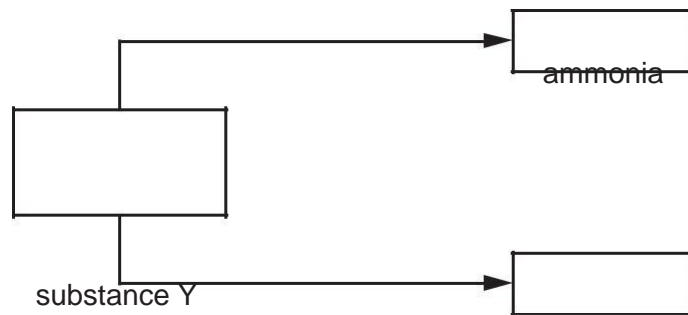
What is compound X?

- (c) calcium oxide
- (d) copper(II) oxide
- (e) magnesium oxide
- (f) sodium oxide

32 The diagram shows some reactions of substance Y.

heat with an

ammonium compound



a salt

heat with

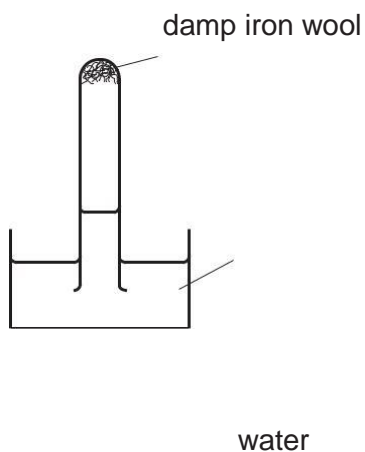
dilute acid

Which type of substance is Y?

- A** an alcohol
- B** a base
- C** a catalyst
- D** a metal

33 A test-tube containing damp iron wool is inverted in water.

After three days, the water level inside the test-tube has risen.



Which statement explains this rise?

- A** Iron oxide has been formed.
- B** Iron wool has been reduced.
- C** Oxygen has been formed.
- D** The temperature of the water has risen.

34 Greenhouse gases may contribute to climate change.

Two of these gases are emitted into the atmosphere as a result of processes within animals.

Gas ..1 .. is produced by process ..3 ..

Gas ..2 .. is produced by process ..4 ..

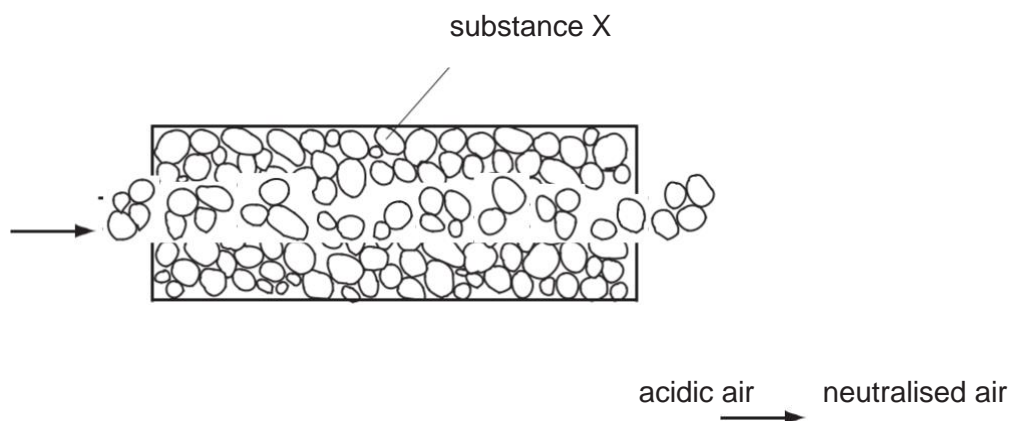
Which row correctly complete gaps 1, 2, 3 and 4?

	1	2	3	4
A	CO	C ₂ H ₆	digestion	respiration
B	CO	C ₂ H ₆	respiration	digestion
C	CO ₂	CH ₄	digestion	respiration
D	CO ₂	CH ₄	respiration	digestion

- 35 To grow rose plants, a fertiliser containing nitrogen, phosphorus and potassium is often used. For the best rose flowers, the fertiliser should contain a high proportion of potassium. Which fertiliser is best for producing rose flowers?

fertiliser	proportion by mass		
	N	P	K
A	9	0	25
B	13	13	20
C	29	5	0
D	29	15	5

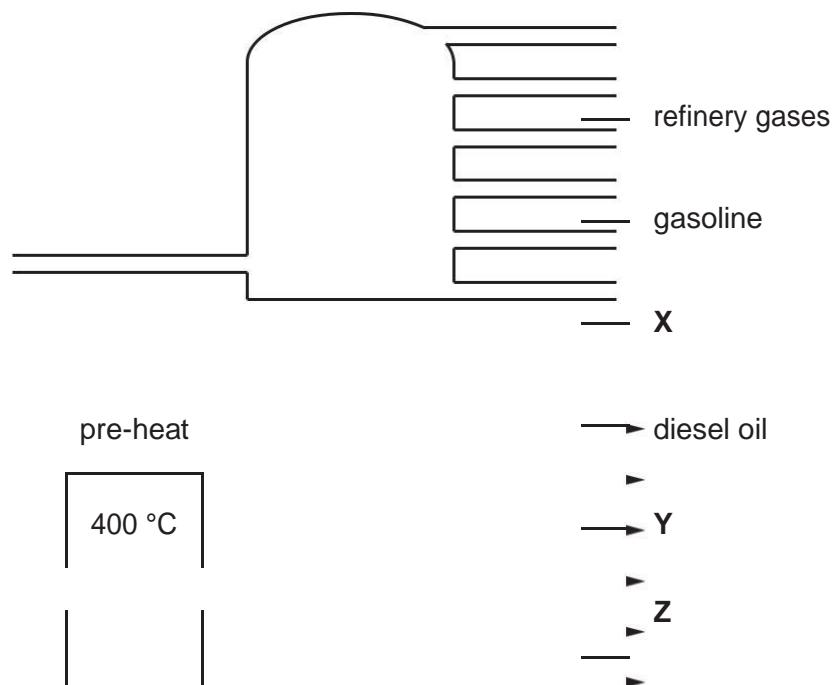
- 36 Air containing an acidic impurity was neutralised by passing it through a column containing substance X.



What is substance X?

- A calcium oxide
- B sand
- C sodium chloride
- D concentrated sulfuric acid

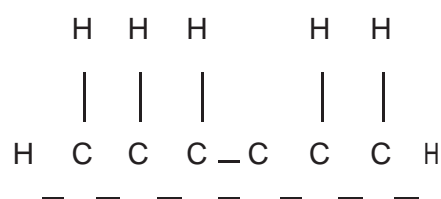
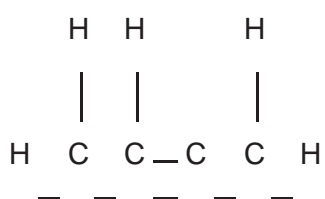
37 In an oil refinery, petroleum is separated into useful fractions. The diagram shows some of these fractions.



What are fractions X, Y and Z?

	X	Y	Z
A	fuel oil	bitumen	paraffin (kerosene)
B	fuel oil	paraffin (kerosene)	bitumen
C	paraffin (kerosene)	bitumen	fuel oil
D	paraffin (kerosene)	fuel oil	bitumen

(ii) The structures of three compounds are shown.





(iii) They all contain an even number of carbon atoms.

(iv) They all contain the same functional group.

(v) They are all hydrocarbons.

(vi) They are all saturated.

(iv) Which bond is **not** in a molecule of ethanoic acid?

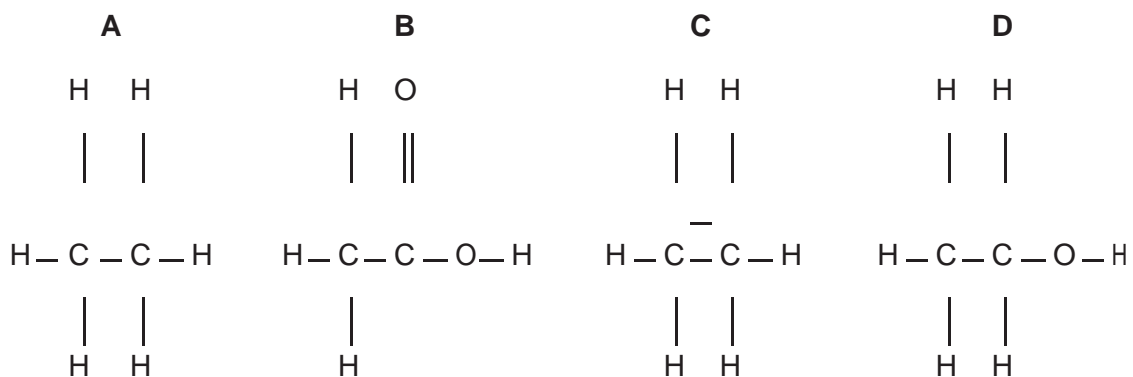
A C–O

B C=O

C C=C

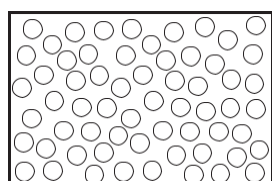
D O–H

40. Which structure is incorrect?

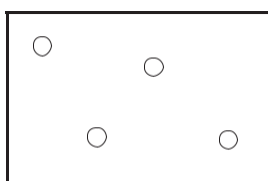


GRADE:IGCSE YEAR 2	SUBJECT:CHEMISTRY	DATE: 16 APR 2020
WORKSHEET NUMBER:4	WORKSHEET TOPIC:EXTRACTION OF METAL	
INSTRUCTION (IF ANY):	https://youtu.be/3yGhRRaPE1s	

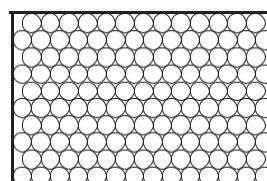
1 The diagrams show the arrangement of particles in three different physical states of substance X.



state 1



state 2



state 3

Which statement about the physical states of substance X is correct?

- A** Particles in state 1 vibrate about fixed positions.
- B** State 1 changes to state 2 by diffusion.
- C** State 2 changes directly to state 3 by condensation.
- D** The substance in state 3 has a fixed volume.
- 2 What is always true for a pure substance?
- A** It always boils at 100 °C.
- B** It contains only one type of atom.
- C** It has a sharp melting point.
- D** It is solid at room temperature.
- 3 Element Y has a nucleon number of 19 and a proton number of 9.
- Which group in the Periodic Table does it belong to?
- A** I **B** III **C** VII **D** VIII
- 4 The nucleon number and proton number of the lithium atom are shown by the symbol ${}^7_3\text{Li}$
- Li. What is the correct symbol for the lithium ion in lithium chloride?
- A** ${}^6_2\text{Li}^-$ **B** ${}^6_3\text{Li}^+$ **C** ${}^7_3\text{Li}^+$ **D** ${}^7_3\text{Li}^-$
- 5 What is the relative molecular mass, M_r , of HNO_3 ?
- A** 5 **B** 31 **C** 32 **D** 63

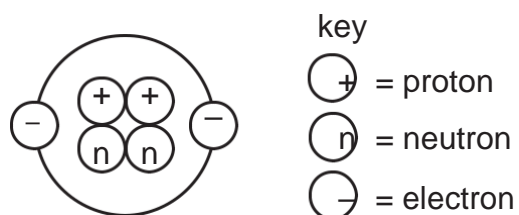
6 The table shows the structure of different atoms and ions.

particle	proton number	nucleon number	number of protons	number of neutrons	number of electrons
Mg	12	24	12	W	12
Mg ²⁺	X	24	12	12	10
F	9	19	9	Y	9
F ⁻	9	19	9	10	Z

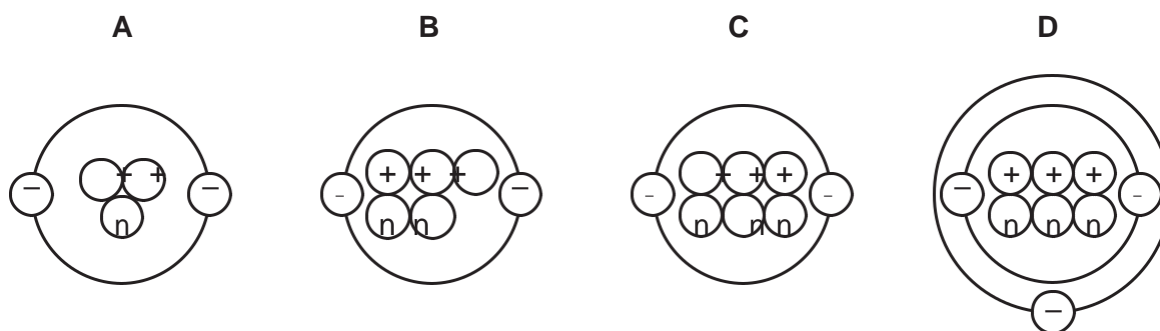
What are the values of W, X, Y and Z?

	W	X	Y	Z
A	10	10	9	9
B	10	12	10	9
C	12	10	9	10
D	12	12	10	10

7 The diagram shows the structure of an atom.



Which diagram shows the structure of an isotope of this atom?



8 Which two elements react together to form an ionic compound?

element	electronic structure
R	2,4
T	2,8
X	2,8,1
Z	2,8,7

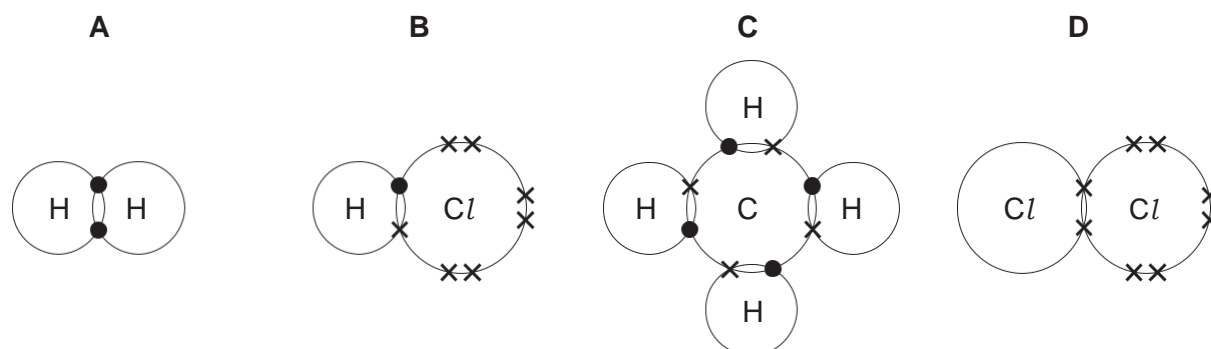
- A R and T B T and X C X and Z D Z and R

9 Element X forms an acidic, covalent oxide.

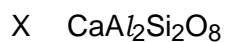
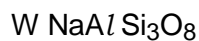
Which row shows how many electrons there could be in the outer shell of an atom of X?

	1	2	6	7
A	$\uparrow\downarrow$	$\uparrow\downarrow$	$\uparrow\downarrow$	$\uparrow\downarrow$
B	$\uparrow\downarrow$	$\uparrow\downarrow$	$\uparrow\downarrow$	$\uparrow\downarrow$
C	$\uparrow\downarrow$	$\uparrow\downarrow$	$\uparrow\downarrow$	$\uparrow\downarrow$
D	$\uparrow\downarrow$	$\uparrow\downarrow$	$\uparrow\downarrow$	$\uparrow\downarrow$

10 Which diagram does **not** show the outer shell electrons in the molecule correctly?



11 The chemical formulae of two substances, W and X, are given.

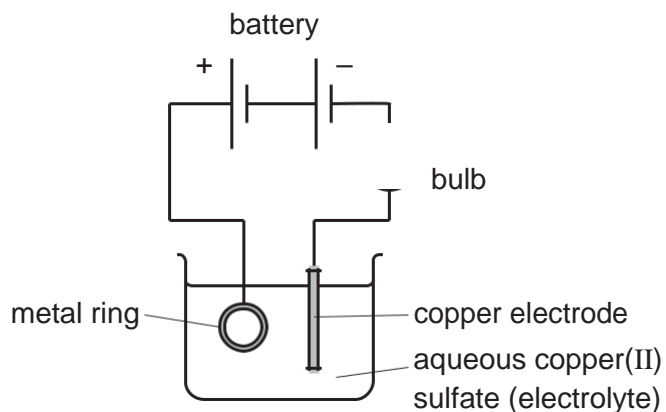


Which statements are correct?

- 1 W and X contain the same amount of oxygen.
- 2 W contains three times as much silicon as X.
- 3 X contains twice as much aluminium as W.

- A 1 and 2 B 1 and 3 C 2 and 3 D 1, 2 and 3

12 The diagram shows apparatus used in an attempt to electroplate a metal ring with copper.



The experiment did not work.

Which change is needed in the experiment to make it work?

- A Add solid copper(II) sulfate to the electrolyte.
- B Increase the temperature of the electrolyte.
- C Replace the copper electrode with a carbon electrode.
- D Reverse the connections to the battery.

13 Three electrolysis cells are set up. Each cell has inert electrodes. The electrolytes are listed below.

cell 1 aqueous sodium chloride cell

2 dilute sulfuric acid

cell 3 molten lead(II) bromide

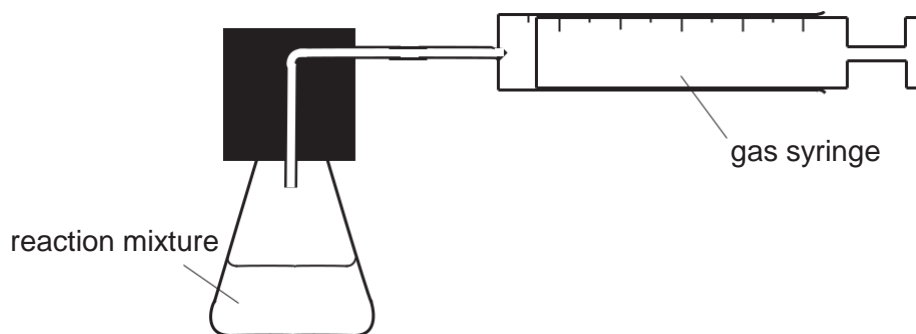
In which of these cells is a gas formed at **both** electrodes?

- A 1 and 2
- B 1 and 3
- C 2 only
- D 3 only

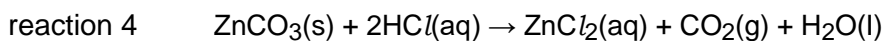
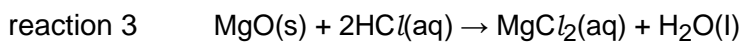
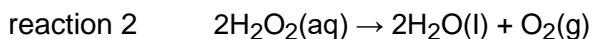
14 Which process is **not** exothermic?

- A burning a fossil fuel
- B obtaining lime from limestone
- C radioactive decay of ^{235}U
- D reacting hydrogen with oxygen

15 The apparatus shown can be used to measure the rate of some chemical reactions.



For which two reactions would this apparatus be suitable?

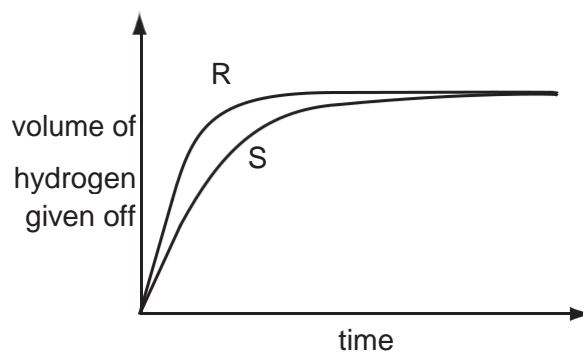


- A 1 and 2 B 1 and 3 C 2 and 4 D 3 and 4

16 A student investigates the rate of reaction between magnesium and excess sulfuric acid.

The volume of hydrogen given off in the reaction is measured over time.

The graph shows the results of two experiments, R and S.



Which change in conditions would cause the difference between R and S?

- A A catalyst is added in S.
- B The acid is more concentrated in R than in S.
- C The magnesium is less finely powdered in R than in S.
- D The temperature in R is lower than in S.

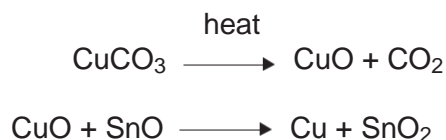
17 When pink cobalt(II) chloride crystals are heated they form steam and a blue solid.

When water is added to the blue solid, it turns pink and becomes hot.

Which terms describe the pink cobalt(II) chloride crystals and the reactions?

	pink cobalt(II) chloride	reactions
A	aqueous	irreversible
B	anhydrous	reversible
C	hydrated	irreversible
D	hydrated	reversible

18 The red colour in some pottery glazes may be formed as a result of the reactions shown.



These equations show that1..... is oxidised and2..... is reduced.

Which substances correctly complete gaps 1 and 2 in the above sentence?

	1	2
A	CO ₂	SnO ₂
B	CuCO ₃	CuO
C	CuO	SnO
D	SnO	CuO

19 Carbon dioxide gas reacts with aqueous sodium hydroxide.

Which type of reaction takes place?

A decomposition

B fermentation **C**

neutralisation **D**

oxidation

20 An aqueous solution of the organic compound methylamine has a pH greater than 7.

Which statement about methylamine is correct?

A It neutralises an aqueous solution of sodium hydroxide. **B**

It reacts with copper(II) carbonate to give carbon dioxide. **C** It reacts with hydrochloric acid to form a salt.

D It turns blue litmus red.

21 A solution contains barium ions and silver ions and one type of anion. What could the anion be?

A chloride only

B nitrate only **C**

sulfate only

D chloride or nitrate or sulfate

22 A mixture containing two anions was tested and the results are shown below.

test	result
dilute nitric acid added	effervescence of a gas which turned limewater milky
dilute nitric acid added, followed by aqueous silver nitrate	yellow precipitate formed

Which anions were present?

- A carbonate and chloride
- B carbonate and iodide
- C sulfate and chloride
- D sulfate and iodide

23 Astatine is an element in Group VII of the Periodic Table. It has only ever been produced in very small amounts.

What are the likely properties of astatine?

	colour	state	reaction with aqueous potassium iodide
A	black	solid	no reaction
B	dark brown	gas	brown colour
C	green	solid	no reaction
D	yellow	liquid	brown colour

24 The diagram shows the positions of elements L, M, Q, R and T in the Periodic Table. These letters are not the chemical symbols of the elements.



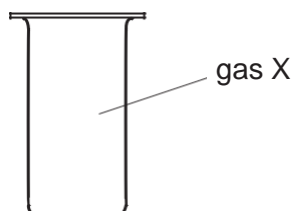
Which statement about the properties of these elements is correct?

- A L reacts more vigorously with water than does M.
- B L, M and Q are all metals.
- C T exists as diatomic molecules.
- D T is more reactive than R.

25 The table compares the properties of Group I elements with those of transition elements. Which entry in the table is correct?

	property	Group I elements	transition elements
A	catalytic activity	low	high
B	density	high	low
C	electrical conductivity	low	low
D	melting point	high	low

26 X is a monatomic gas.



Which statement about gas X is correct?

- A X burns in air.
- B X is coloured.
- C X is unreactive.
- D X will displace iodine from potassium iodide.

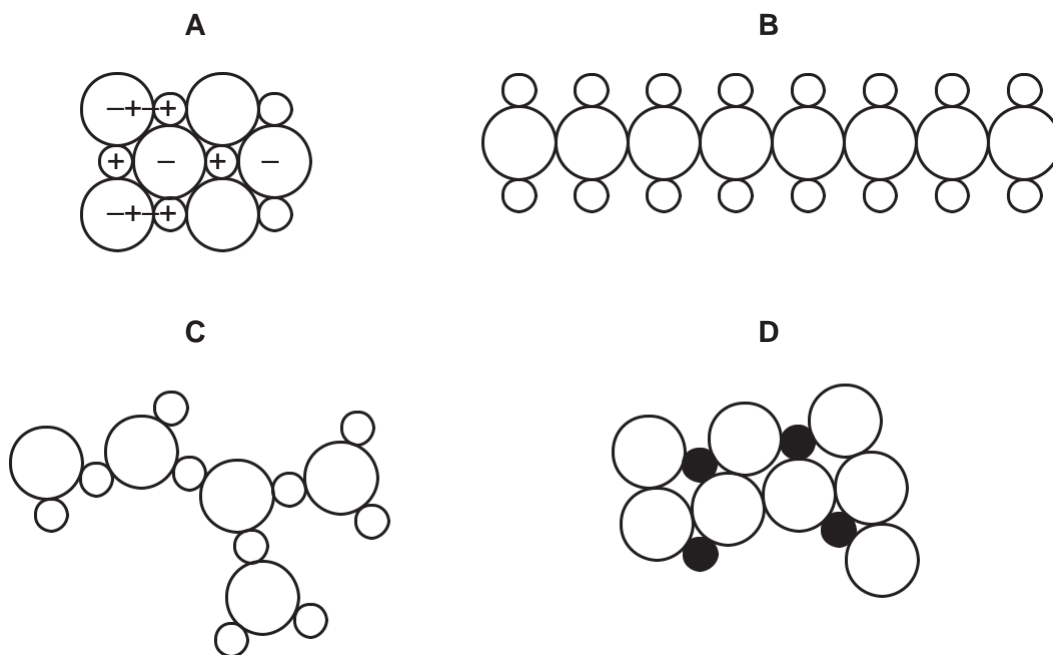
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Which set of properties help to explain the use of aluminium for cooking and storing food?

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metal	dilute hydrochloric acid	water
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What is the order of reactivity of the metals?

	most reactive	→	least reactive
A	P		Q
B	P		R
C	R		P
D	R		Q

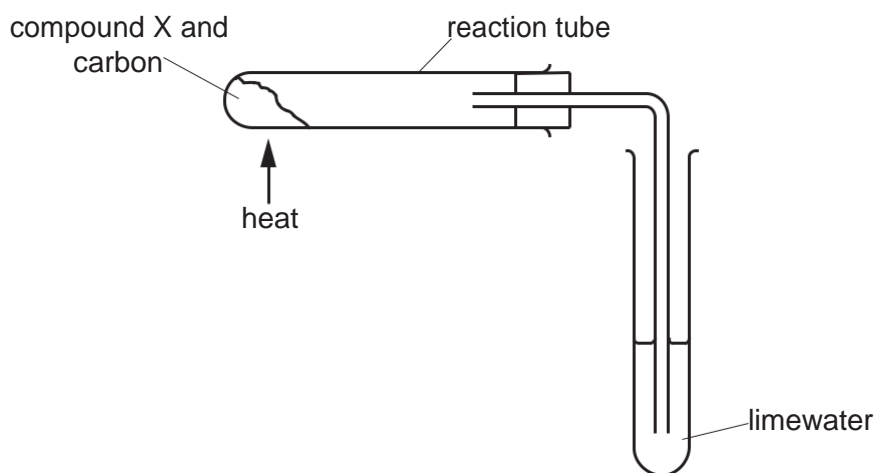
30 The table gives the composition of the atmosphere of four newly discovered planets.

planet	composition of atmosphere
W	argon, carbon dioxide and oxygen
X	argon, nitrogen and oxygen
Y	argon, carbon dioxide and methane
Z	methane, nitrogen and oxygen

On which planets is the greenhouse effect likely to occur?

- A** W only
- B** W, X and Z
- C** W and Y only
- D** W, Y and Z

31 Compound X is heated with carbon using the apparatus shown.

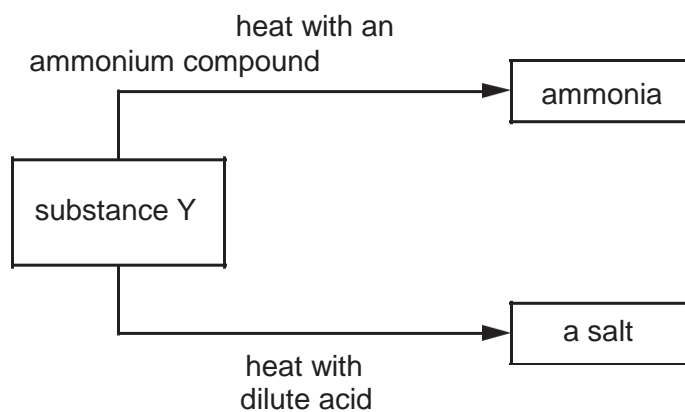


A brown solid is formed in the reaction tube and the limewater turns cloudy.

What is compound X?

- A calcium oxide
- B copper(II) oxide
- C magnesium oxide
- D sodium oxide

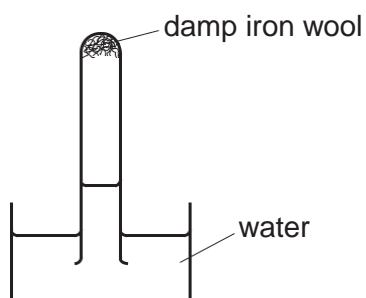
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Which type of substance is Y?

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Which statement explains this rise?

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 - B** Iron wool has been reduced.
 - C** Oxygen has been formed.
 - D** The temperature of the water has risen.
- 34** Greenhouse gases may contribute to climate change.

Two of these gases are emitted into the atmosphere as a result of processes within animals.

Gas ..1 .. is produced by process ..3 ..

Gas ..2 .. is produced by process ..4 ..

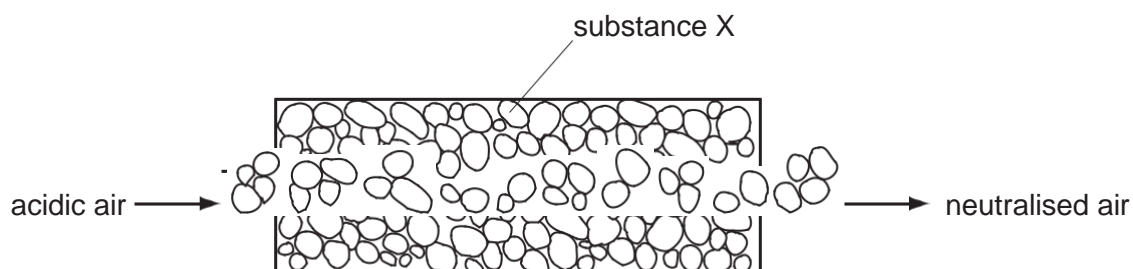
Which row correctly complete gaps 1, 2, 3 and 4?

	1	2	3	4
A	CO	C ₂ H ₆	digestion	respiration
B	CO	C ₂ H ₆	respiration	digestion
C	CO ₂	CH ₄	digestion	respiration
D	CO ₂	CH ₄	respiration	digestion

- 35 To grow rose plants, a fertiliser containing nitrogen, phosphorus and potassium is often used. For the best rose flowers, the fertiliser should contain a high proportion of potassium. Which fertiliser is best for producing rose flowers?

fertiliser	proportion by mass		
	N	P	K
A	9	0	25
B	13	13	20
C	29	5	0
D	29	15	5

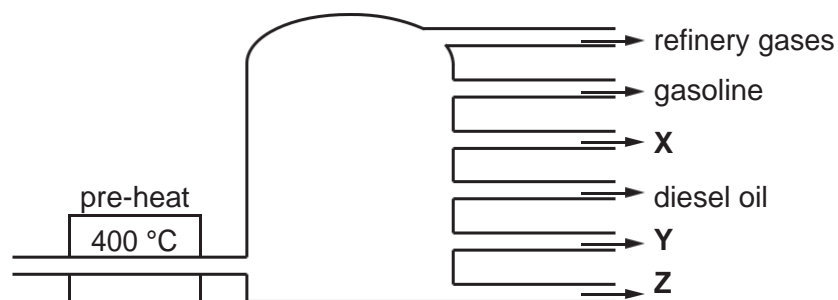
- 36 Air containing an acidic impurity was neutralised by passing it through a column containing substance X.



What is substance X?

- A** calcium oxide
- B** sand
- C** sodium chloride
- D** concentrated sulfuric acid

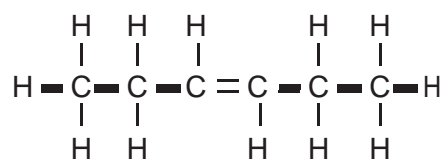
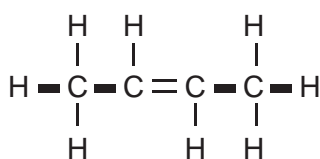
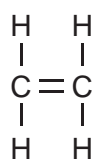
37 In an oil refinery, petroleum is separated into useful fractions. The diagram shows some of these fractions.



What are fractions X, Y and Z?

	X	Y	Z
A	fuel oil	bitumen	paraffin (kerosene)
B	fuel oil	paraffin (kerosene)	bitumen
C	paraffin (kerosene)	bitumen	fuel oil
D	paraffin (kerosene)	fuel oil	bitumen

38 The structures of three compounds are shown.



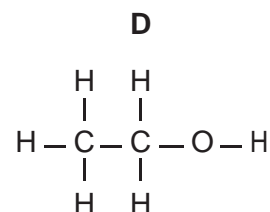
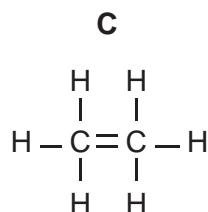
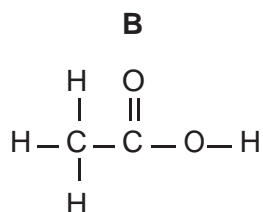
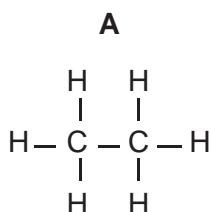
Why do these substances all belong to the same homologous series?

- A** They all contain an even number of carbon atoms.
- B** They all contain the same functional group.
- C** They are all hydrocarbons.
- D** They are all saturated.

39 Which bond is **not** in a molecule of ethanoic acid?

- A** C–O
- B** C=O
- C** C=C
- D** O–H

40. Which structure is incorrect?



 Cambridge Assessment International Education	 <i>The Revival of Tradition</i>	
GRADE:IGCSE YEAR 2	SUBJECT:CHEMISTRY	DATE: 23 APR 2020
WORKSHEET NUMBER:5	WORKSHEET TOPIC:ELEMENTS AND COMPOUNDS	
INSTRUCTION (IF ANY):	https://youtu.be/ds-s59Drvk	

1. A student investigates the speed of reaction between dilute hydrochloric acid and calcium carbonate. The reaction produces carbon dioxide gas.

(a) Fig. 1.1 shows some of the apparatus the student uses.

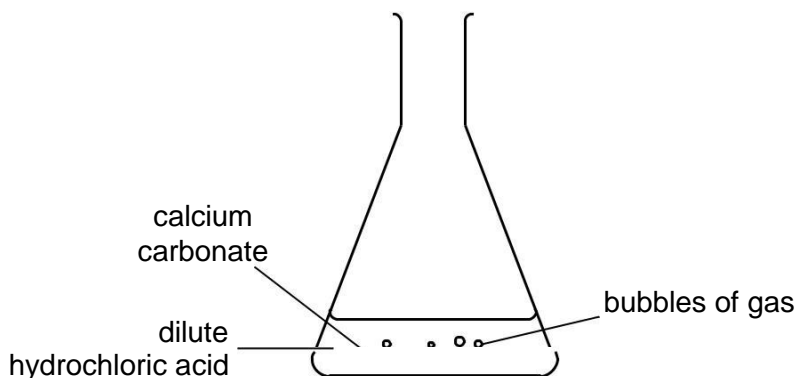


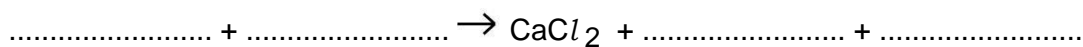
Fig. 1.1

(i) The student wants to measure the volume of gas produced in this reaction every minute for 10 minutes.

Complete Fig. 1.1 to show how the student collects and measures the volume of the gas.

(ii) As the reaction proceeds, the speed of the reaction decreases. Explain this change in terms of collisions between reacting particles.

(b) Complete the symbol equation for the reaction between hydrochloric acid and calcium carbonate.



(c) Describe the test for carbon dioxide gas.

test

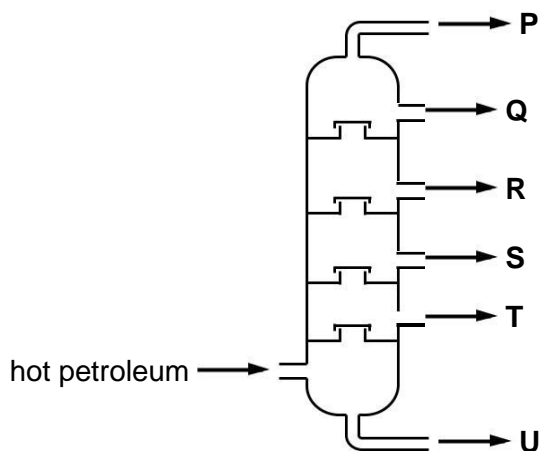
result

(d) Suggest the names of an acid and a base that the student can use to make sodium nitrate.

acid

base

2. Fig. 2.1 shows the fractional distillation of petroleum (crude oil).



Six fractions, **P**, **Q**, **R**, **S**, **T** and **U**, are produced.

(a) State which fraction

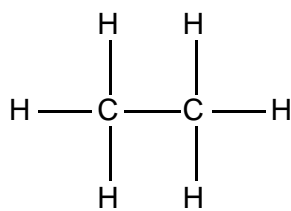
has the greatest intermolecular forces of attraction between molecules,

.....

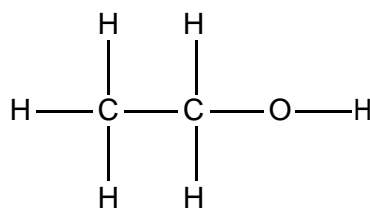
contains only gas molecules.

.....

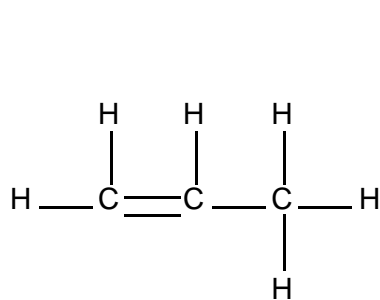
(b) Fig. 2.2 shows four molecules.



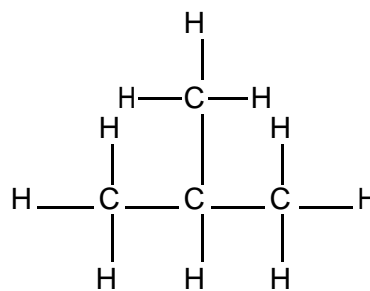
A



B



C



D

(i) From Fig. 2.2, give the letter of a molecule of an alkane.

.....

(ii) From Fig. 2.2, give the letter of a molecule of an alkene. Explain your answer.

(iii) Explain why alkanes and alkenes do not appear in the Periodic Table.

(c) Complete Fig. 2.3 to show the bonding electrons in one molecule of methane, CH₄.

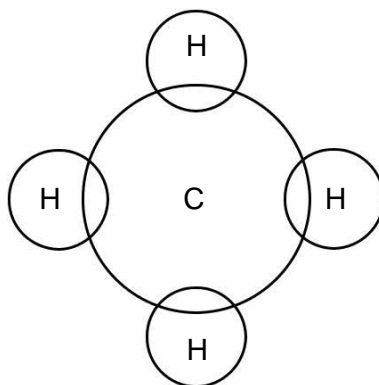


Fig. 2.3

(d) In the last one hundred years, the proportion of carbon dioxide in the air has increased.

(i) State **one** reason for the increased amount of carbon dioxide.

(ii) State **one** reason why the increase in carbon dioxide may harm the environment.

3. Lithium and sodium are metals in Group I of the Periodic Table of Elements.

a. (i) The electronic structure of lithium is 2,1.

State the electronic structure of sodium.

(ii) Rubidium is another Group I

metal. It is stored in a liquid.

Suggest a liquid in which rubidium is stored and explain why it is stored in this liquid.

liquid

explanation

(iii) Predict the **two** products of the electrolysis of molten rubidium chloride.

..... and

(b) The reaction between lithium and oxygen is exothermic.

(i) State the change that always occurs in an **exothermic** reaction.

(ii) State the charges on the ions formed in this reaction, and explain how these ions

form. lithium ion

oxide ion

explanation

4. (a) Five substances are to be separated from mixtures. Fig. 4.1 shows the five mixtures and five methods of separation.

Draw a straight line from each mixture to the method that is used to obtain the underlined substance from the mixture. One has been done for you.

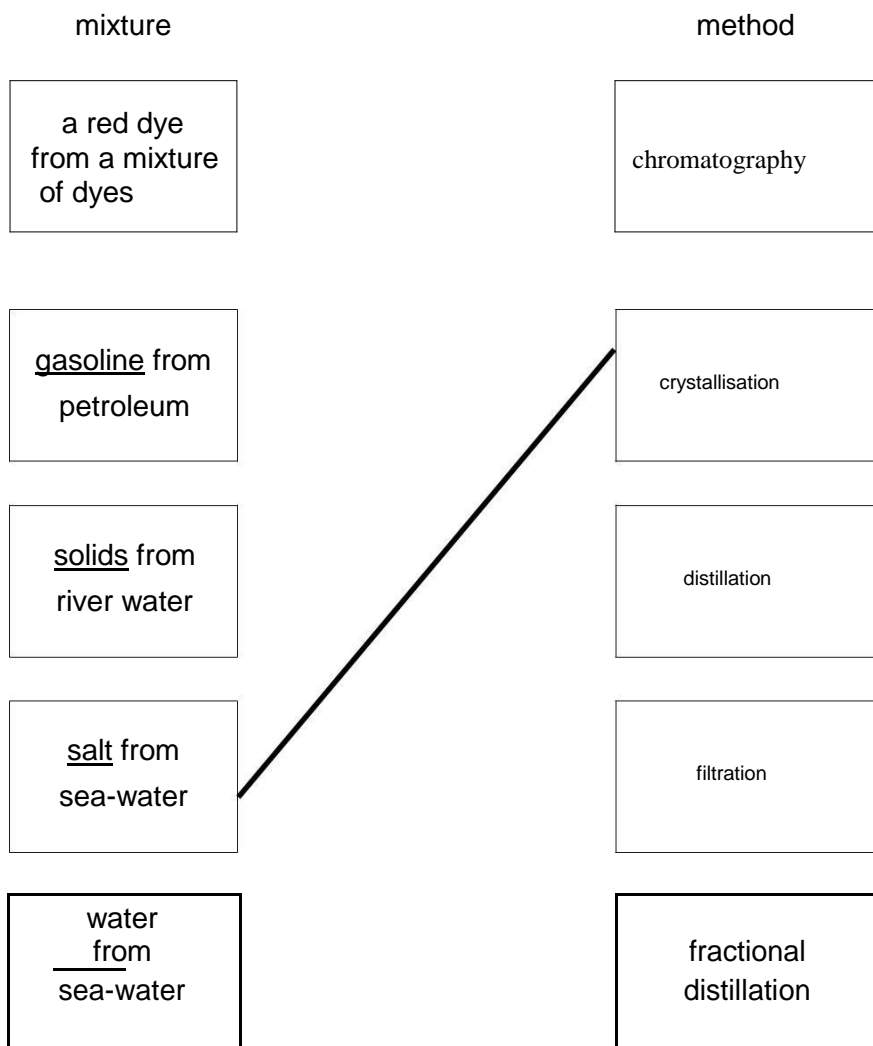


Fig. 4.1

(b) An atom of iron has proton number 26 and nucleon number 56.

Calculate the number of electrons and the number of neutrons in this atom.

number of electrons.....

number of neutrons.....

- (b) (i) Predict the type of bonding that occurs when the following pairs of elements react to form compounds.

rubidium, a Group I metal	+	iodine, a Group VII non-metal	bonding type
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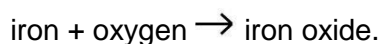
sulfur, a Group VI non-metal	+	fluorine, a Group VII non-metal	bonding type
------------------------------------	---	---------------------------------------	--------------------

- (c) During the reaction between rubidium and oxygen the rubidium melts due to a change in the temperature.

State the type of chemical reaction that causes this temperature change.

.....

- (ii) (i) Iron reacts with oxygen. The equation for this reaction is



State whether the iron is oxidised or reduced in this reaction.

Explain your answer.

iron is

explanation




- (iii) Another substance is involved in the formation of rust. Name this substance.

.....

- (iv) Describe **one** method of rust prevention. Explain how this method prevents rust from forming.

method

explanation

 Cambridge Assessment International Education		
GRADE:IGCSE YEAR 2	SUBJECT:CHEMISTRY	DATE: 5 MAY 2020
WORKSHEET NUMBER:6	WORKSHEET TOPIC:GROUP II ELEMENTS AND HALOGENS	
INSTRUCTION (IF ANY):	DO THE ANSWERS IN YOUR NOTEBOOK	

1. The table compares the properties of Group I elements with those of transition elements. Which entry in the table is correct?

	Property	Group I elements	transition elements
A	catalytic activity	low	high
B	density	high	low
C	electrical conductivity	low	low
D	melting point	high	low

2. Element Y has a nucleon number of 14 and a proton number of 7. Which group in the Periodic Table does it belong to?
A . I B. II C. VII D. V
3. The diagram shows the positions of elements L, M, Q, R and T in the Periodic Table. These letters are not the chemical symbols of the elements.

																		R	T						
L																									
M		Q																							

Which statement about the properties of these elements is correct?

- A. L reacts more vigorously with water than does M.
B. L, M and Q are all metals.
C. T exists as diatomic molecules.
D. T is more reactive than R.

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
----	----	----	----	---	---	----	----

(a) To which period of the periodic table do these elements belong to?

(b) Answer these questions 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.

GRADE:IGCSE YEAR 2	SUBJECT:CHEMISTRY	DATE: 20 MAY 2020
WORKSHEET NUMBER:7	WORKSHEET TOPIC:MULTIPLE CHOICE QUESTIONS	
INSTRUCTION (IF ANY):	TICK THE CORRECT ANSWER	

1. Which molecule contains a double covalent bond?

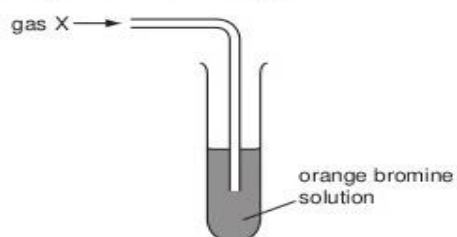
- A. ethane
- B. methane
- C. nitrogen
- D. water

2. Which formula does **not** represent an acid?

- A H_2SO_4 B HCL C HNO_3 D NH_3

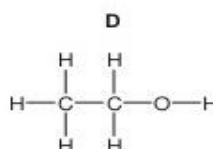
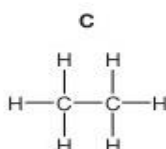
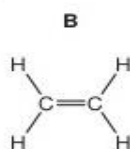
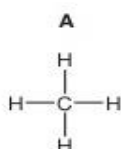
3.

The apparatus shows an experiment used to test gas X.



The bromine solution quickly becomes colourless.

What is the structure of gas X?



Which simple molecules are the basic units of protein?

- A. amino acids
- B. fatty acids
- C. sugars
- D. vitamins

5. The atomic number of element X is 11. The mass number of element X is 23.

Which statement about an atom of X is correct?

- A. It contains 12 nucleons in the nucleus and 11 orbiting electrons.
- B. It contains 12 nucleons in the nucleus and 11 orbiting protons.
- C. It contains 23 nucleons in the nucleus and 11 orbiting electrons.
- D. It contains 23 nucleons in the nucleus and 11 orbiting protons.

6. Metal X reacts rapidly with steam but only very slowly with cold water. What is X?

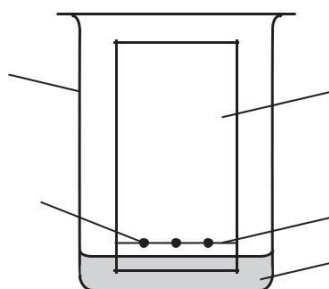
- A. copper
- B. iron
- C. magnesium
- D. sodium

7. Sucrose is a covalent compound. It is a solid at room temperature.

Which statement about sucrose is correct?

- A. It is made of atoms that are close together and in continuous random motion.
- B. It is made of atoms that are far apart and vibrating about a fixed point.
- C. It is made of molecules that are close together and vibrating about a fixed point.
- D. It is made of molecules that are far apart and in continuous random motion.

8. The apparatus used for chromatography is shown.



Which statement about the method used for chromatography is **not** correct?

- A. The beaker is swirled to help the solvent to rise.
- B. The chromatography paper is placed in the beaker after the solvent has been added.
- C. The chromatography paper is removed before the solvent reaches the top of the paper.
- D. The sample spots are placed on the pencil line above the level of the solvent.

9. Which statement about noble gases is **not** correct?

- A. A neon atom has a full outer shell of electrons.
- B. Helium is used to fill balloons.
- C. Noble gases are very unreactive.
- D. Noble gases exist as molecules containing two atoms.

10. Gases are easier to compress than either solids or liquids. Which statement about gas molecules is correct?

- A. They are closer together and the forces between them are stronger.
- B. They are closer together and the forces between them are weaker.
- C. They are further apart and the forces between them are stronger.
- D. They are further apart and the forces between them are weaker.

11. Which gas is used to provide an inert atmosphere in lamps?

- A. argon
- B. helium
- C. neon
- D. nitrogen

12. Biological catalysts speed up reactions in the body. What is another name for biological catalysts?

- A .antibodies
- B.enzymes
- C. fatty acids
- D.hormones

13. A mixture of ethanol and methanol are separated by fractional distillation.

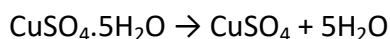
This method of separation depends on a difference in property X of these two alcohols.What is property X?

- A. boiling point
- B. melting point
- C. solubility
- D. colour

14. An element S has the proton number 18. The next element in the Periodic Table is an element T. Which statement is correct?

- A. Element T has one more electron in its outer shell than element S.
- B. Element T has one more electron shell than element S.
- C. Element T is in the same group of the Periodic Table as element S.
- D. Element T is in the same period of the Periodic Table as element S.

15. The equation shows a reaction that is reversed by changing the conditions.
forward reaction



How can the forward reaction be reversed?

	by adding water		by heating
A	✓		✓
B	✓	X	
C	X		✓
D	X		X

16. When dilute sulfuric acid reacts with aqueous sodium hydroxide, the temperature of the solution increases. Which words describe this reaction?

- A. endothermic and neutralization
- B. endothermic and redox
- C. exothermic and neutralization
- D. exothermic and redox

17. The table gives information about four elements.




Which element is a transition element.

	Colour of element	Electrical conductivity of element	Colour of oxide

A	black	High	Colourless
B	colourless	Low	White
C	grey	High	Red
D	yellow	Low	colourless

Which is not a property of Group 1 metals?

- A. they are soft and can be cut with a knife
- B. they corrode rapidly when exposed to air
- C. they produce an acidic solution when they react with water
- D. they react rapidly with water producing hydrogen gas

 Cambridge Assessment International Education	 SANSKAR SCHOOL <i>The Revival of Tradition</i>	 CAMBRIDGE INTERNATIONAL SCIENCE AWARDS 2016-2019
GRADE:IGCSE YEAR 2	SUBJECT:CHEMISTRY	DATE: 22 JUN 2020
WORKSHEET NUMBER:8	WORKSHEET TOPIC: Acids,Bases and Salts	
INSTRUCTION (IF ANY):	DO THE ANSWERS IN YOUR NOTEBOOK	

1. Complete the following reactions:

(i) Magnesium hydroxide and dilute sulfuric acid

(ii) zinc and dilute sulfuric acid

(iii) copper carbonate and dilute sulfuric acid

2. Write equations for the reaction of dilute sulfuric acid with each of the following:

(i) ammonia

(ii) sodium hydroxide

(iii) iron

3. (a) Match the following pH values to the solutions given:

1 3 7 10 below 10

The solutions all have the same concentration.

Solution **pH**

Aqueous ammonia, a weak base




Dilute hydrochloric acid, a strong acid

Aqueous sodium hydroxide, a strong base

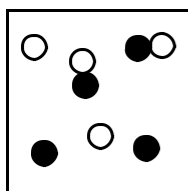
Aqueous sodium chloride, a salt

Dilute ethanoic acid, a weak acid

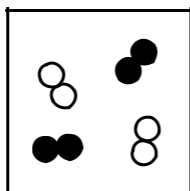
(b) Explain why the solutions of hydrochloric acid and ethanoic acid with the same concentration, in mol/dm³, have a different pH ?

 Cambridge Assessment International Education	 SANSKAR SCHOOL <i>The Revival of Tradition</i>	 CAMBRIDGE INTERNATIONAL SCIENCE AWARD 2016-2019
GRADE:IGCSE YEAR 2	SUBJECT:CHEMISTRY	DATE: 29 JUN 2020
WORKSHEET NUMBER:9	WORKSHEET TOPIC: Multiple Choice Questions	
INSTRUCTION (IF ANY):	DO THE ANSWERS IN YOUR NOTEBOOK	

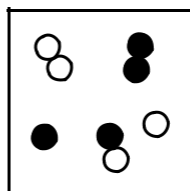
- Which statement about atoms and molecules is correct?
 - Atoms gain or lose electrons to become molecules.
 - Atoms of the same element contain the same number of molecules.
 - Molecules are the simplest unit of an atom.
 - Molecules contain atoms which are covalently bonded.
- Which diagram represents a mixture of two elements?



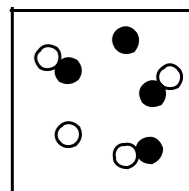
A



B



C



D

- Which statement about atoms and ions is not correct?
 - A chlorine atom loses one electron to obtain a noble gas electronic structure.
 - A magnesium atom has two valency electrons.
 - A sodium ion, Na^+ , has eight electrons in its outer shell.
 - Oxygen atoms and oxide ions each have two occupied electron shells.
- Which substance contains a multiple covalent bond?
 - hydrogen
 - methane
 - nitrogen
 - water
- Solid X is warmed with dilute sodium hydroxide. A gas, which turns moist red litmus paper to blue, is given off.
Dilute hydrochloric acid is added to solid X. A gas, which turns limewater cloudy, is given off.
What is X?
 - ammonium carbonate
 - ammonium chloride
 - sodium carbonate
 - sodium chloride

6. Astatine is at the bottom of Group VII of the Periodic Table.
What happens if astatine is added to aqueous potassium chloride?
- A black precipitate is formed.
 - Chlorine is formed.
 - No reaction takes place.
 - The colour of the solution becomes darker.
7. The noble gases make up Group VIII of the Periodic Table. Which statement is correct?
- Argon exists as non-bonded atoms.
 - Krypton is very poisonous.
 - Neon burns in pure oxygen with a red flame.
 - The chemical formula of helium is He_2 .
8. Why is drinking water treated with chlorine.
- to improve the taste
 - to kill bacteria
 - to remove colour
 - to remove insoluble impurities
9. Sucrose is a covalent compound. It is a solid at room temperature.
Which statement about sucrose is correct?
- It is made of atoms that are close together and in continuous random motion.
 - It is made of atoms that are far apart and vibrating about a fixed point.
 - It is made of molecules that are close together and vibrating about a fixed point.
 - It is made of molecules that are far apart and in continuous random motion.
10. Some chemical compounds are broken down by electrolysis using inert electrodes. Which row identifies the electrode products for the stated electrolyte?

	electrolyte	product at anode	product at cathode
A	aqueous copper chloride	hydrogen	copper
B	molten aluminium oxide	aluminium	oxygen
C	molten copper chloride	chlorine	copper
D	molten potassium bromide	potassium	bromine

11. When concentrated sulfuric acid is added to water, the temperature of the mixture increases. Which row describes the type of reaction and the energy change for this process?

	type of reaction	energy change
A	endothermic	chemical to thermal
B	endothermic	thermal to chemical
C	exothermic	chemical to thermal
D	exothermic	thermal to chemical

12. Iron oxide reacts with carbon monoxide. The word equation for the reaction is:

iron oxide + carbon monoxide \rightarrow iron + carbon dioxide Which statement is not correct?




- A. Carbon is neither oxidised nor reduced.
- B. Carbon is oxidised.
- C. Iron is reduced.
- D. This is a redox reaction.

13. Which element in a period of the Periodic Table has the greatest metallic character?




- A. the element which most readily forms an anion
- B. the element with the fewest outer-shell electrons
- C. the element with the highest atomic number.
- D. the element with the largest group number

14. Which gas is used to provide an inert atmosphere in lamps?

- A. argon
- B. helium
- C. neon
- D. nitrogen




 Cambridge Assessment International Education		
GRADE:IGCSE YEAR 2	SUBJECT:CHEMISTRY	DATE: 30 JUN 2020
WORKSHEET NUMBER:10	WORKSHEET TOPIC: Organic Chemistry	
INSTRUCTION (IF ANY):	DO THE ANSWERS IN YOUR NOTEBOOK	

1. What type of bonding do carbon atoms normally have?
2. What is the valency of carbon. Also write the position of carbon in periodic table.
3. What are the names of two different carbon containing molecules that are important for living organisms?
4. Write the difference between saturated and unsaturated hydrocarbons.
5. Write down the names and draw the structure of first four alkanes.

 Cambridge Assessment International Education	 SANSKAR SCHOOL <i>The Revival of Tradition</i>	 CAMBRIDGE INTERNATIONAL SCIENCE AWARDS 2016-2019
GRADE:IGCSE YEAR 2	SUBJECT:CHEMISTRY	DATE: 06 JULY 2020
WORKSHEET NUMBER:11	WORKSHEET TOPIC: Organic Chemistry	
INSTRUCTION (IF ANY):	DO THE ANSWERS IN YOUR NOTEBOOK	

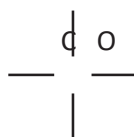
- Plot a graph of the boiling points of the first six alkanes against the number of carbon atoms in the molecule. Comment on the shape of the graph.
- Write a word equation for the complete combustion of ethane.
- What is the major natural source of methane?
- Draw a diagram of the arrangement of the electrons in the bonding of methane .
- Explain the reason for the increase of boiling points in alkenes as we move down.
- The main constituent of natural gas is hydrocarbon X.
To which homologous series does X belong and how many atoms are in one molecule of X?

	Homologous series	Number of atoms in one molecule
A	Alkane	1
B	Alkane	5
C	Alkene	1
D	alkene	5

 Cambridge Assessment International Education	 SANSKAR SCHOOL <i>The Revival of Tradition</i>	
GRADE:IGCSE YEAR 2	SUBJECT:CHEMISTRY	DATE: 08 JULY 2020
WORKSHEET NUMBER:12	WORKSHEET TOPIC: Organic Chemistry	
INSTRUCTION (IF ANY):	DO THE ANSWERS IN YOUR NOTEBOOK	

(c)

- Write down the names, molecular and structural formulae of the first three alkenes.
- What do you observe if ethene is bubbled through bromine water.
- Draw a diagram showing the arrangement of electrons in the bonding of ethene .Show just the valence electrons.
- Give the balanced chemical equation for the burning of the hydrocarbon,propane.
- Ethanol, C_2H_5OH , and hydrocarbons burn to form carbon dioxide and one other product during complete combustion.
 - Name the other product.
 - Complete the diagram to show the structure of a molecule of ethanol.






6. (a) Methane, CH_4 , and butane, C_4H_{10} , are both alkanes. Methane boils at $-162\text{ }^\circ\text{C}$.
Butane boils at $-1\text{ }^\circ\text{C}$.

Explain this difference in terms of molecular size and intermolecular attractive forces.

(b) Complete the dot-and-cross diagram to show the bonding electrons in carbon dioxide.



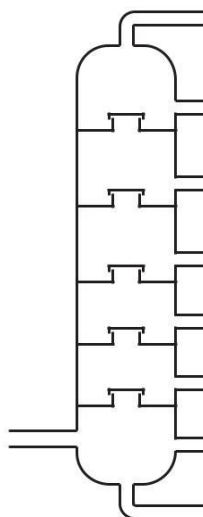
- (c) State the type of chemical bond that forms between oxygen, a non-metal, and sodium, a metal.

 Cambridge Assessment International Education		
GRADE:IGCSE YEAR 2	SUBJECT:CHEMISTRY	DATE: 05 AUG 2020
WORKSHEET NUMBER:13	WORKSHEET TOPIC: Petrochemicals and polymers	
INSTRUCTION (IF ANY):	DO THE ANSWERS IN YOUR NOTEBOOK	

1. (a) Natural gas and petroleum (crude oil) are fossil fuels.

- (i) Name **one** other fossil fuel.
 - (ii) Name the main constituent of natural gas.
 - (iii) Name the gas in air that reacts with fuels when they burn.
- (b) Petroleum is a mixture of hydrocarbons.

Fig. 1.1 shows the industrial apparatus used to separate petroleum into useful products.



- (i) Name the process used to separate petroleum into useful products.
 - (ii) State the meaning of the term *hydrocarbon*.
2. There are two types of polymerisation, addition and condensation.

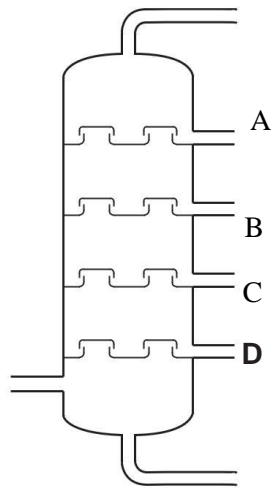
(a) Explain the difference between these two types of polymerisation.




(b) Some plastics, formed by polymerisation, are non-biodegradable.

(c) Describe **two** pollution problems that are caused by non-biodegradable plastics.

3. Petroleum is separated into fractions by fractional distillation

Which labelled fraction contains molecules with the largest intermolecular attractive forces?



 Cambridge Assessment International Education		
GRADE:IGCSE YEAR 2	SUBJECT:CHEMISTRY	DATE: 10 AUGUST 2020
WORKSHEET NUMBER:14	WORKSHEET TOPIC: PETROCHEMICALS AND POLYMERS	
INSTRUCTION (IF ANY):	DO THE ANSWERS IN YOUR NOTEBOOK	

In text questions of Science coursebook.

Pg no.379 and 382

11.01 – 11.09



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GRADE:IGCSE YEAR 2	SUBJECT:CHEMISTRY	DATE: 17 AUGUST 2020
WORKSHEET NUMBER:15	WORKSHEET TOPIC: PETROCHEMICALS AND POLYMERS	
INSTRUCTION (IF ANY):	DO THE ANSWERS IN YOUR NOTEBOOK	

- 1 What are characteristics of all living organisms?
- A breathing, excretion, nutrition
 - B excretion, growth, nutrition
 - C reproduction, respiration, germination
 - D secretion, growth, sensitivity

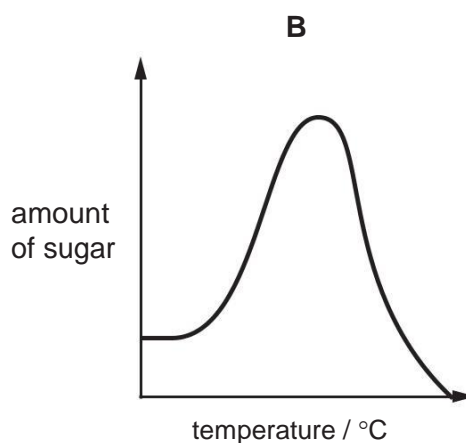
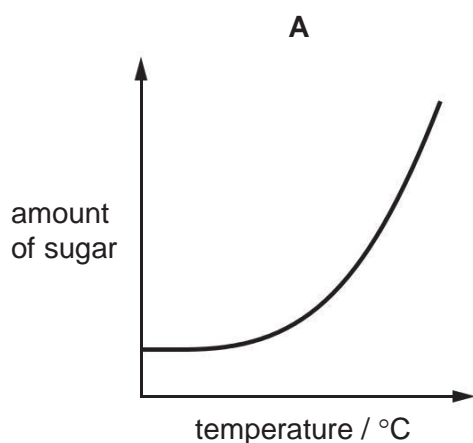
- 2 Which process depends on diffusion?
- A circulation
 - B digestion
 - C gaseous exchange
 - D phagocytosis

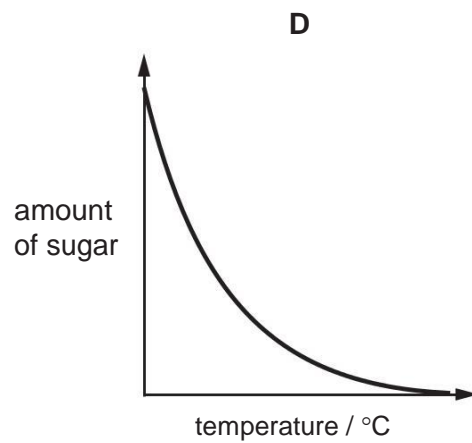
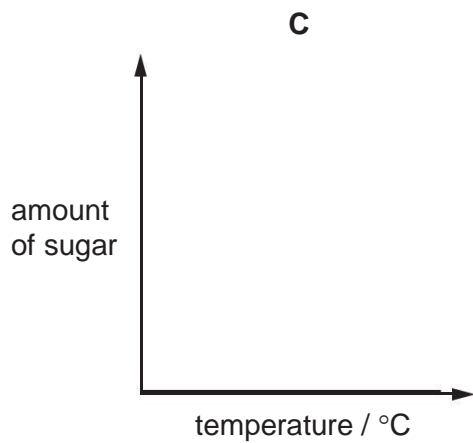
- 3 A human enzyme breaks down starch into simple sugars.

A solution of this human enzyme was heated to 90 °C for 30 minutes.

2 cm³ of this human enzyme solution was added to starch solution in several different test-tubes. The test-tubes were kept at different temperatures for 15 minutes.

Which graph shows the amount of sugar produced in the test-tubes?





4. The table shows the results of three food tests carried out on the same food sample.

name of solution	colour change observed
Benedict's	blue to orange
biuret	remains blue
iodine	brown to black

Which nutrients are present in the food sample?

- A protein, reducing sugar and starch
 - B protein and reducing sugar only
 - C reducing sugar and starch only
 - D starch only
- 5 Transpiration involves the diffusion of water vapour from which part of a leaf?
- A chloroplast
 - B cuticle
 - C phloem
 - D stomata
- 6 Which component of the blood produces antibodies?
- A plasma
 - B platelets
 - C red blood cells
 - D white blood cells
- 7 Which word equation represents aerobic respiration?
- A carbon dioxide + water → glucose
 - B carbon dioxide + water → glucose + oxygen
 - C glucose + oxygen → carbon dioxide
 - D glucose + oxygen → carbon dioxide + water

8 Which statement about adrenaline is **not** correct?

A It decreases blood glucose concentration.

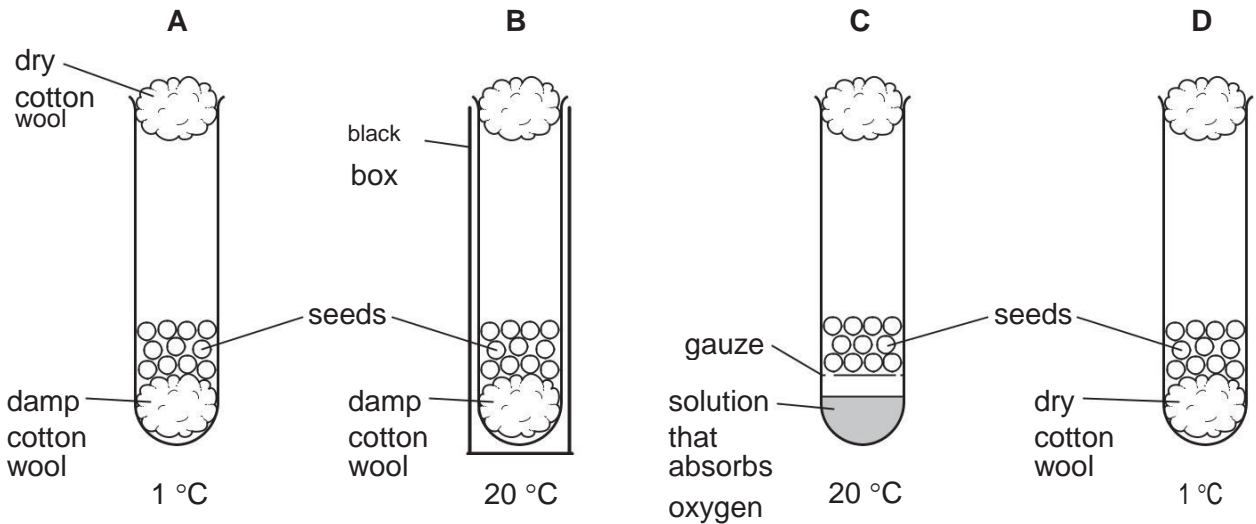
B It is carried by the blood.

C It is produced by a gland.

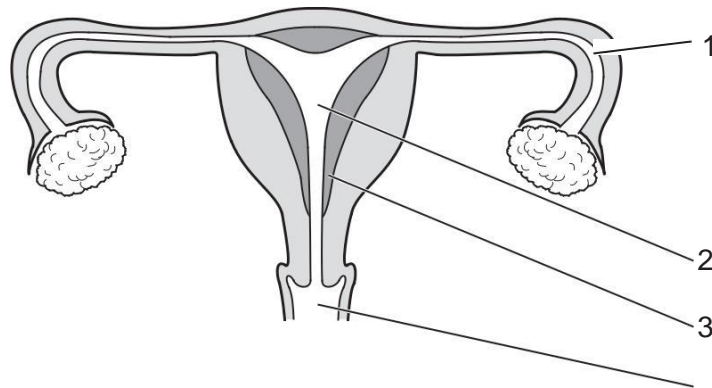
D The heart is one of its target organs.

9 In an investigation, four test-tubes containing seeds were set up as shown in the diagram.

After several days, which test-tube will contain the most germinated seeds?



10. The diagram shows the reproductive system of a human female.



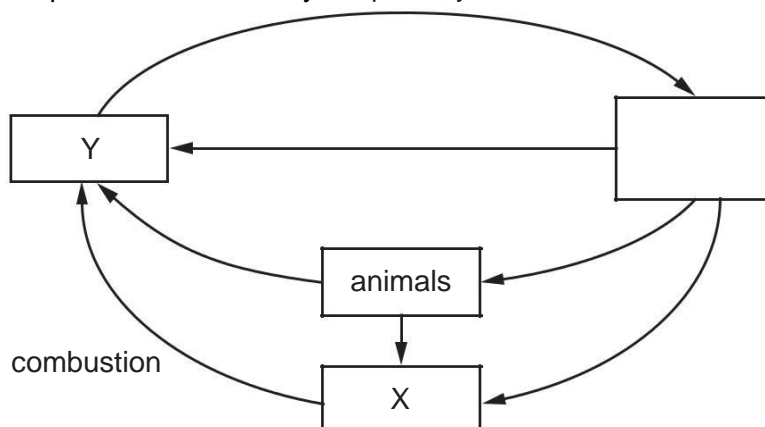
Which numbers give the places where the sperm are deposited, the egg is fertilised and implantation occurs?

	sperm deposited	egg fertilised	implantation occurs
A	3	1	2
B	3	2	3
C	4	1	3
D	4	2	2

11 Which shows a food chain?

- A herbivore → producer → Sun
- B producer → consumer → consumer
- C producer → consumer → herbivore
- D Sun → producer → herbivore

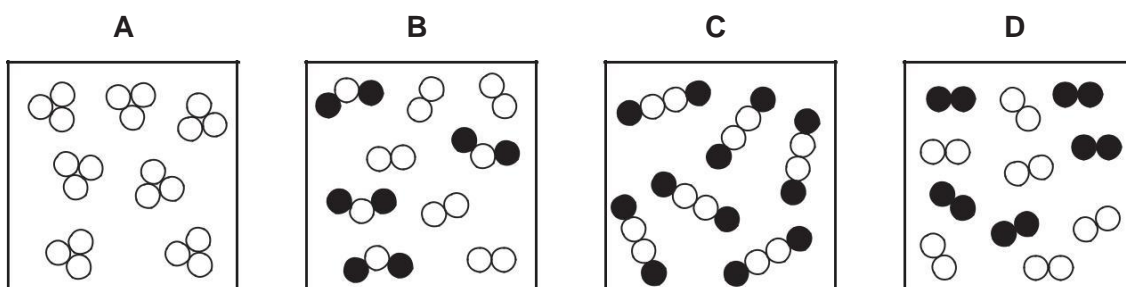
12 The diagram shows part of the carbon cycle. photosynthesis



What are X and Y?

	X	Y
A	carbon dioxide	oxygen
B	fossil fuel	carbon dioxide
C	fossil fuel	oxygen
D	oxygen	carbon dioxide

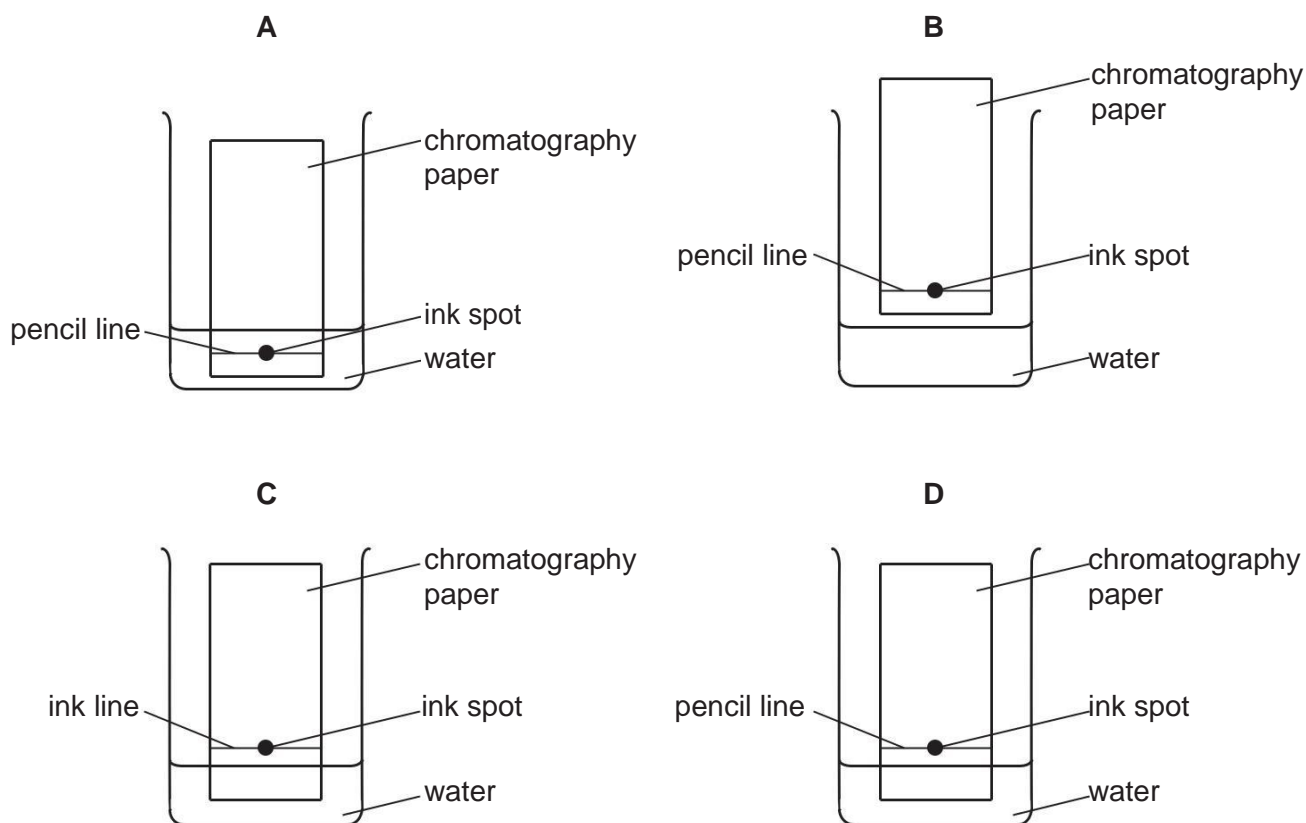
13. Which diagram represents a mixture of elements?



14. What is the formula of nitric acid?

- A HCL
- B HNO₃
- C NaOH
- D NH₃

15 Which diagram shows how apparatus is used to separate the different colours in an ink?



15. The breakdown of molten lead bromide by 1 forms the elements lead and bromine.

Lead is formed at the 2 .

Which words complete gaps 1 and 2 ?

	1	2
A	electrolysis	anode
B	electrolysis	cathode
C	reduction	anode
D	reduction	cathode

16. Substance X increases the rate of a chemical reaction, but it remains unchanged at the end of the reaction.

Which word describes substance X?

- A catalyst
- B electrolyte**
- C product
- D unreactive

17. Iron oxide reacts with carbon

monoxide. The word equation for the

reaction is:



Which statement is **not** correct?

- A Carbon is neither oxidised nor reduced.
- B Carbon is oxidised.
- C Iron is reduced.
- D This is a redox reaction.

18. The results of two tests on a white solid are shown.

	test	result
1	add aqueous sodium hydroxide	white precipitate formed
2	add dilute hydrochloric acid	colourless gas formed

What is the white solid?

- A iron(II) carbonate
- B iron(II) chloride
- C zinc carbonate
- D zinc chloride

19. The positions of four elements are shown in the outline of the Periodic Table. Which element has a high melting point and forms coloured compounds?

							A								
C	D														B

20. Which element is used to extract copper from copper oxide?

A aluminium

B

ca

rb

o

n

C

ir

o

n

D

so

di

u

m

21. Gasoline is a hydrocarbon fuel obtained from petroleum. Which statement is correct?

A Gasoline burns to form carbon dioxide and water.

- B** Gasoline contains the elements carbon, hydrogen and oxygen. **C** Gasoline is used as a fuel in diesel engines.
- D** The combustion of gasoline is an endothermic reaction.