

# CHEMISTRY

## PAPER 2C

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## 1- (4CH0-W 2013-Paper 2C-Q3)-KINETIC THEORY AND DIFFUSION, OXYGEN AND OXIDES

The photograph shows an aeroplane that has a rocket motor.



(a) One of the tanks on the aeroplane contains liquid oxygen.

- (i) Complete the diagram to show the arrangement of the particles in a liquid. One particle has been drawn for you.

(2)



- (ii) Much more oxygen can be stored in the tank when the oxygen is a liquid rather than a gas.

Give a reason for this in terms of the arrangement of the particles.

(1)

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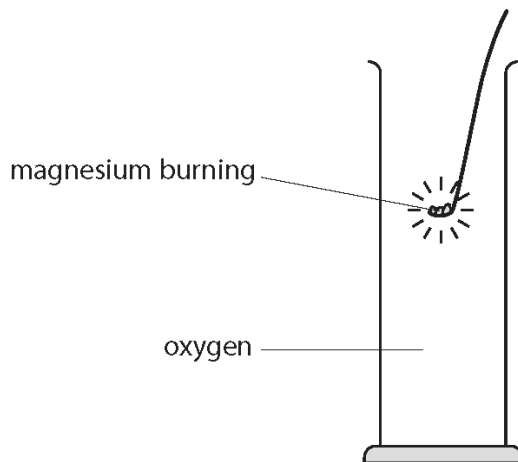
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1- (4CH0-W 2013-Paper 2C-Q3)-KINETIC THEORY AND DIFFUSION, OXYGEN AND OXIDES

(b) Magnesium burns in oxygen to form magnesium oxide.



(i) State **two** observations that can be made when magnesium burns in oxygen.

(2)

1 .....

2 .....

(ii) Give the formula of magnesium oxide.

(1)

(c) A small amount of magnesium oxide is dissolved in water. When universal indicator is added to this solution, the indicator turns blue.

(i) What does the observation with the indicator show about magnesium oxide?

(1)

(ii) Identify the ion that is responsible for the universal indicator turning blue.

(1)

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2- (4CH0-W 2013-Paper 2C-Q1)-KINETIC THEORY AND DIFFUSION

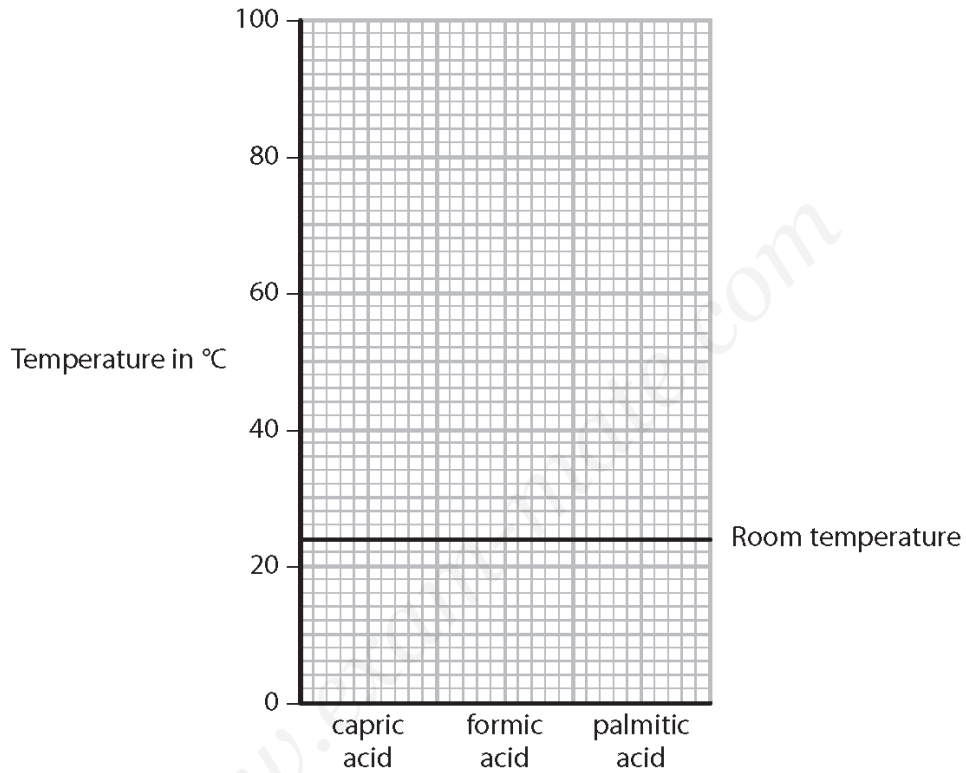
The melting points of three related compounds are

capric acid	32 °C
formic acid	8 °C
palmitic acid	63 °C

The boiling point of all these compounds is above 100 °C

(a) Use the grid to draw a bar chart of the melting points.

(2)



(b) Room temperature has been marked on the grid.

Use your bar chart to give the physical state of each acid at room temperature.

(2)

capric acid .....

formic acid .....

palmitic acid .....

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## 1- (4CH0-S 2015-Paper 2C-Q1)-ATOMIC STRUCTURE

The table shows the numbers of protons, neutrons and electrons in some atoms and ions.

Atom or ion	Protons	Neutrons	Electrons
P	6	8	6
Q	5	6	5
R	9	10	10
S	3	4	2
T	6	6	6

(a) (i) Which particles have the same mass?

(1)

- A** electrons and protons
- B** electrons and neutrons
- C** neutrons and protons
- D** electrons, neutrons and protons

(ii) What is the atomic number of P?

(1)

- A** 6
- B** 8
- C** 12
- D** 14

(iii) What is the mass number of Q?

(1)

- A** 5
- B** 6
- C** 10
- D** 11

## 1- (4CH0-S 2015-Paper 2C-Q1)-ATOMIC STRUCTURE

(b) Which group of the Periodic Table contains element T?

(1)

(c) (i) Which two letters represent isotopes of the same element?

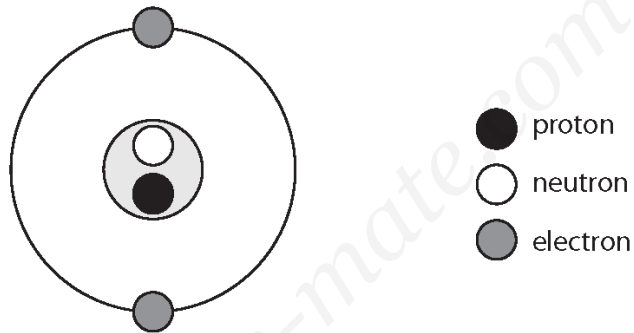
(1)

..... and .....

(ii) Which letter represents a positive ion?

(1)

(d) The diagram shows the arrangement of particles in another ion.



How does the diagram show that this ion has a negative charge?

(1)

## 2- (4CH0-W 2014-Paper 2C-Q1)-ATOMIC STRUCTURE

The table shows the numbers of particles in two atoms, L and M.

	Atom L	Atom M
number of electrons	6	6
number of neutrons	8	6
number of protons	6	6

(a) Which particles are present in the nuclei of both atoms? (1)

- A electrons and neutrons
- B electrons and protons
- C neutrons and protons
- D neutrons, protons and electrons

(b) (i) The atomic number of atom L is ..... (1)

(ii) The mass number of atom L is ..... (1)

(c) Atoms L and M are neutral because (1)

- A the numbers of electrons and neutrons are equal
- B the numbers of electrons and protons are equal
- C the numbers of neutrons and protons are equal
- D the numbers of electrons, neutrons and protons are equal

## 2- (4CH0-W 2014-Paper 2C-Q1)-ATOMIC STRUCTURE

(d) Use information from the table to explain why atoms L and M are isotopes of the same element.

(2)

.....

.....

.....

.....

(e) The electronic configuration of atom M is

(1)

- A 2.2.2
- B 2.4
- C 2.4.6
- D 4.2

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## 3- (4CH0-W 2012-Paper 2C-Q1)-ATOMIC STRUCTURE

- (a) Complete the table to show the relative mass and relative charge of a proton, a neutron and an electron.

(4)

	Proton	Neutron	Electron
Relative mass			1/1840
Relative charge	+ 1		

- (b) The symbol for an atom of one isotope of hydrogen is  ${}^3_1\text{H}$

- (i) State the number of protons, neutrons and electrons present in one atom of this isotope.

(2)

Number of protons .....

Number of neutrons .....

Number of electrons .....

- (ii) What is meant by the term **isotopes**?

(2)

.....

.....

.....

- (c) Bromine has two naturally-occurring isotopes with mass numbers 79 and 81.  
A sample of bromine contained the two isotopes in the following proportions:

$$\text{bromine-79} = 50.7\% \quad \text{and} \quad \text{bromine-81} = 49.3\%$$

Use this information to calculate the relative atomic mass of bromine.  
Give your answer to **two** decimal places.

(2)