

Name:

Date:

C2 - Test 2

BONDING, STRUCTURE AND PROPERTIES OF MATTER

Beginner

GCSE

CHEMISTRY

AQA - Combined Science

Mark

Grade

Materials

For this paper you must have:

- Ruler
- Pencil and Rubber
- Scientific calculator, which you are expected to use when appropriate

Instructions

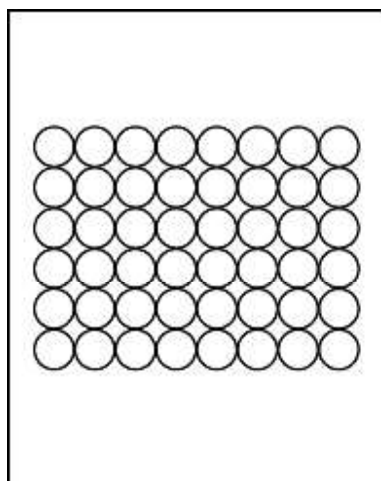
- Answer all questions
- Answer questions in the space provided
- All working must be shown

Information

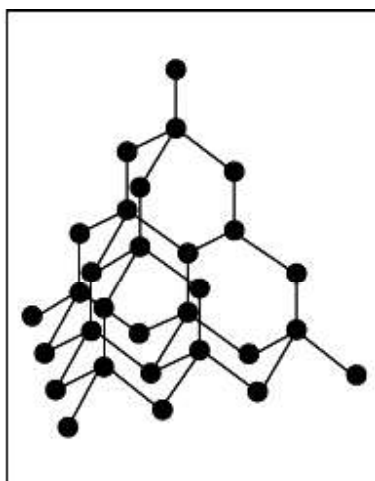
- The marks for the questions are shown in brackets

1.

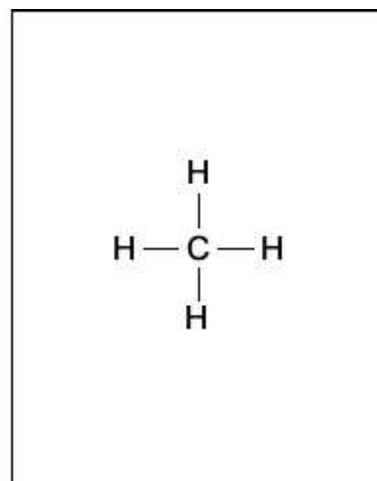
The diagrams represent the structures of five substances, **A**, **B**, **C**, **D** and **E**.



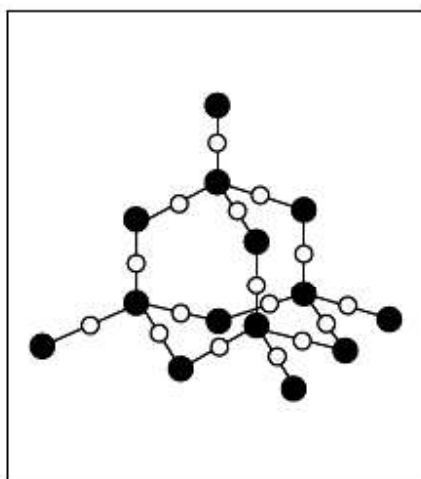
A



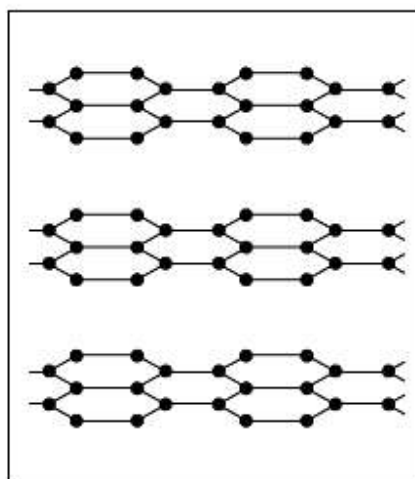
B



C



D



E

(a) Give **one** substance, **A**, **B**, **C**, **D** or **E**, that:

(i) has a very low boiling point

(1)

(ii) is a compound

(1)

(iii) is a metal.

(1)

- (b) Draw a ring around the type of bonding holding the atoms together in substance **C**.

covalent

ionic

metallic

(1)

- (c) Explain why substance **E** is soft and slippery.

(2)

(Total 6 marks)

2.

An argon atom can be represented as $^{40}_{18}\text{Ar}$

- (a) What does the number 40 represent in $^{40}_{18}\text{Ar}$?

(1)

- (b) How many protons does this atom of argon have?

Tick **one** box.

18

☐

22

☐

40

☐

58

☐

(1)

(c) How many neutrons does this atom of argon have?

Tick **one** box.

18

☐

22

☐

40

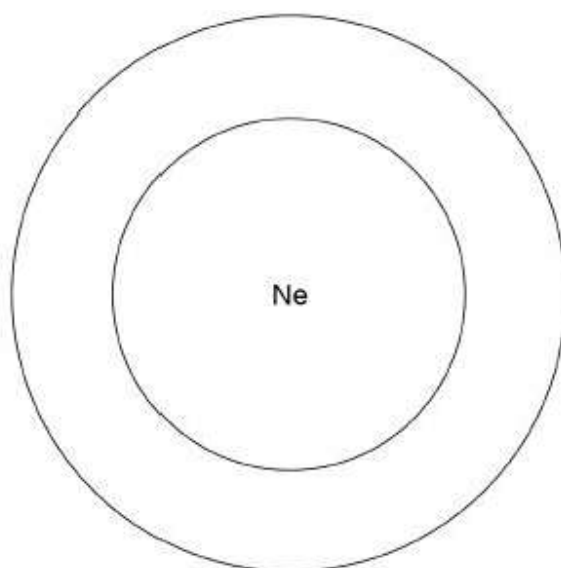
☐

58

☐

(1)

The diagram below shows the energy levels (shells) in a neon atom.



(d) A neon atom has 10 electrons.

Complete the diagram above to show the electronic structure of a neon atom.

Use **x** to represent an electron.

(1)

- (e) The nucleus of a neon atom has a charge.

What is the charge?

Tick **one** box.

Negative

☐

Neutral

☐

Positive

☐

(1)

- (f) A neon atom has 10 protons, 10 electrons and 10 neutrons.

Explain why there is no overall charge on a neon atom.

(2)

- (g) There are two different types of neon atom.

What are these different types of atom called?

Tick **one** box.

Compounds

☐

Ions

☐

Isotopes

☐

Molecules

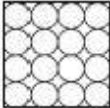
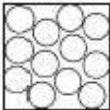
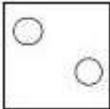
☐

(1)

- (h) Neon is a gas.

The states of matter can be shown by a simple particle model.

Draw **one** line from each state of matter to the correct particle model.

State of matter	Particle model
Gas	
Liquid	
Solid	

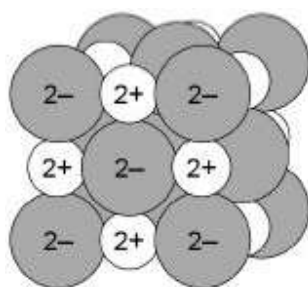
(2)
(Total 10 marks)

3.

This question is about structure and bonding.

- (a) **Figure 1** shows part of the structure of calcium oxide (CaO).

Figure 1



What type of bonding is present in calcium oxide?

Tick **one** box.

Covalent

☐

Ionic

☐

Macromolecular

☐

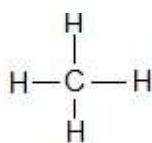
Metallic

☐

(1)

(b) **Figure 2** shows a particle of methane (CH_4).

Figure 2



What type of particle is present in **Figure 2**?

Tick **one** box.

An ion

☐

A lattice

☐

A molecule

☐

A polymer

☐

(1)

(c) **Figure 3** shows the structure of C_{60}

Figure 3



Complete the sentence.

Choose the answer from the box.

diatomic

giant ionic

a fullerene

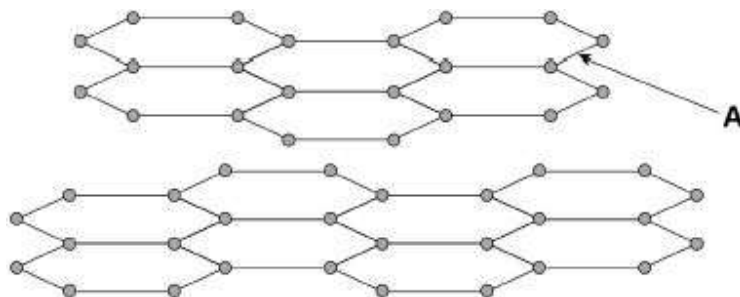
giant metallic

The structure of C_{60} is _____.

(1)

Figure 4 shows the structure of graphite.

Figure 4



(d) What type of bond is labelled **A** in **Figure 4**?

Tick **one** box.

covalent

☐

double

☐

ionic

☐

metallic

☐

(1)

(e) In graphite, each carbon atom forms bonds with other carbon atoms as shown in **Figure 4**

How many electrons does **one** carbon atom use to form **one** bond?

Tick **one** box.

1

☐

2

☐

3

☐

4

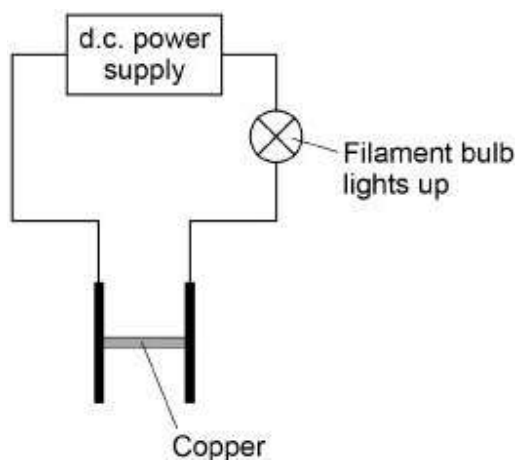
☐

(1)

An electric current is passed through copper.

Figure 5 shows the apparatus used.

Figure 5



- (f) Complete the sentence.

Choose the answer from the box.

gas	liquid	solid	solution
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Figure 5 shows that copper conducts electricity as a _____.

(1)

- (g) Complete the sentence.

Choose the answer from the box.

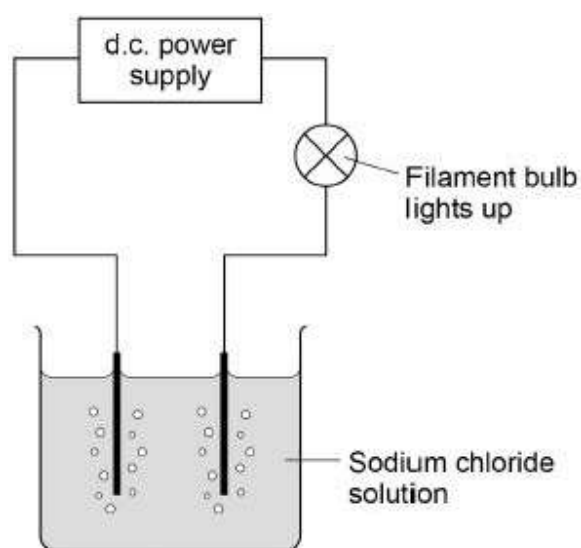
atoms	electrons	ions	molecules
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Copper conducts electricity because of the movement of delocalised _____.

(1)

- (h) **Figure 6** shows the apparatus used to investigate the effect of electricity on sodium chloride solution.

Figure 6



Complete the sentence.

Choose the answer from the box.

dissolved	gaseous	molten
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Figure 6 shows that sodium chloride conducts electricity when _____.

(1)