Particle model – 2021/20 GCSE Gateway Chemistry A

1. Nov/2020/Paper_J248/03/No.7

The charge on an electron is -1.6×10^{-19} C.

What is the charge on a proton?

A -1.6×10^{19} C

B -1.6×10^{-19} C

C 1.6×10^{-19} C

D 1.6×10^{19} C

Your answer ☐ **[1]**

2. Nov/2021/Paper_J248/03/No.1

Which statement about the subatomic particles in an atom is correct?

A Electrons have a relative mass of one.

B Neutrons and electrons are both found in the nucleus.

C Neutrons have a positive charge.

D Protons have a relative mass of one.

Your answer ☐ **[1]**

3. Nov/2021/Paper_J248/01/No.1

Which of these particles has a positive charge?

A Atom

B Electron

C Neutron

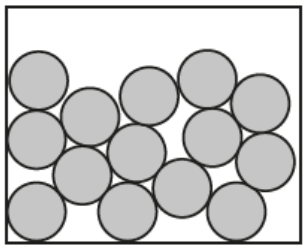
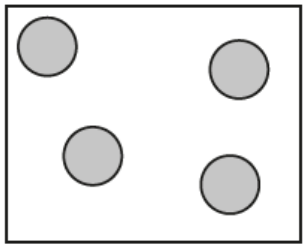
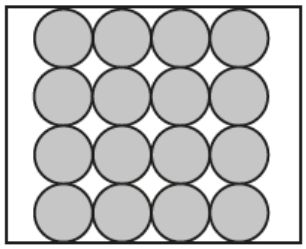
D Proton

Your answer ☐ **[1]**

4. Nov/2020/Paper_J248/01/No.16(a)

The particle model shows how particles are arranged and how they move in the three states of matter.

(a) (i) Draw a line to match each **diagram** with the correct **state of matter**.

Diagram	State of matter
	Solid
	Liquid
	Gas

[2]

(ii) When a liquid is heated to its boiling point, it will turn into a gas.

Use the particle model to explain why this is a **physical change**.

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

5. Nov/2021/Paper_J248/03/No.18(b)

(b) A student investigates the reaction of magnesium carbonate with dilute hydrochloric acid. Look at the equation for the reaction.

$MgCO_3(s) + 2HCl(aq) \longrightarrow MgCl_2(aq) + CO_2(g) + H_2O(l)$

Describe the **movement** of the magnesium carbonate particles used in this reaction.

Use ideas about the particle model in your answer.

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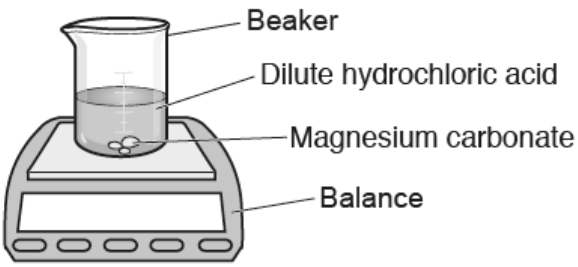
..... **[2]**

(c) The student sets the experiment up on a balance as shown in the diagram.



(i) Explain why the mass on the balance **decreases** as the reaction occurs.

Use ideas about the particle model in your answer.

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

(ii) The particle model is not a perfect representation of the three states of matter.

Describe **two** limitations of the particle model.

1 .....

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2 .....

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