Particle Model

Total Mark – 15

Question: 1

15 Substance **Y** melts at −7 °C and boils at 59 °C.

What is the state of substance **Y** at room temperature?

A Gas

B Liquid

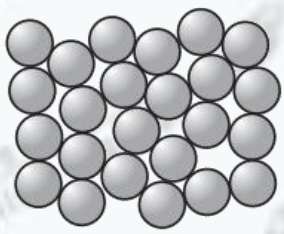
C Plasma

D Solid

Your answer ☐ **[1]**

Question: 2

1 This particle model shows the particles in iron.



What state does this particle model represent?

A Gas

B Liquid

C Plasma

D Solid

Your answer ☐ **[1]**

Question: 3

2 A student reacts calcium carbonate with hydrochloric acid.

$CaCO_3(s) + 2HCl(aq) \rightarrow CaCl_2(aq) + H_2O(l) + CO_2(g)$

What physical state does **(g)** represent in the balanced symbol equation?

A Aqueous

B Gas

C Liquid

D Solid

Your answer ☐ **[1]**

Question: 4

3 Substances can exist in three states of matter.

Solid $\rightleftharpoons$ Liquid $\underset{\textbf{Y}}{\rightleftharpoons}$ Gas

What is change of state **Y** called?

A Condensing

B Evaporating

C Freezing

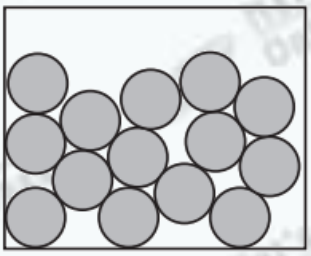
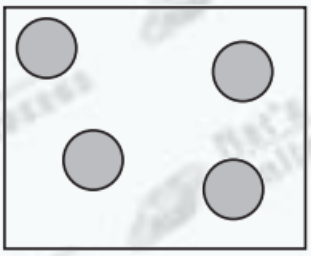
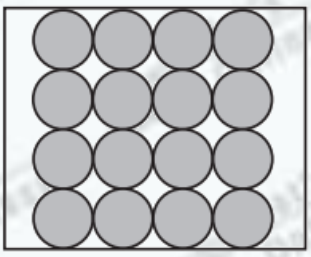
D Melting

Your answer ☐ **[1]**

Question: 5

16 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]**

(b) The table shows the properties of different substances.

Substance	Melting point (°C)	Boiling point (°C)	Soluble in water?	Conducts electricity in solid state?	Conducts electricity in molten state?
A	−210	−196	No	No	No
B	1084	2562	No	Yes	Yes
C	605	1137	Yes	No	Yes
D	−78	−34	Yes	No	No

(i) Which **two** substances are gases at room temperature?

Tick (✓) **two** boxes.

A ☐

B ☐

C ☐

D ☐

[1]

(ii) Substance **C** is an ionic substance.

Use the information in the table to explain why.

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

(c) You are provided with a mixture of substances **B** and **C**.

Substance **B** is insoluble in water. Substance **C** is soluble in water.

(i) Describe how you could separate substance **B** from the mixture.

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..... **[3]**

(ii) Describe how you would then obtain substance **C** after separating substance **B**.

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