UNITED LEARNING

YEAR 7

SCIENCE

END OF YEAR CHEMISTRY ASSESSMENT 2023

TIME ALLOWED: 40 MINUTES

Student Name	
Class	

Total Mark	/40

QUESTION 1 – CHANGES OF STATE (3 marks)

1.1 What is the change of state when something **boils**?

Tick the correct box.

Water to gas	☐	Liquid to gas	☐
Liquid to solid	☐	Gas to liquid	☐

1

1.2 What is the change of state when something **condenses**?

Tick the correct box.

Gas to solid	☐	Liquid to gas	☐
Gas to water	☐	Gas to liquid	☐

1

1.3 What is the name given to the following change of state?

liquid to solid

Tick the correct box.

Evaporation	☐	Melting	☐
Freezing	☐	Sublimation	☐

1

QUESTION 2 – WORD EQUATIONS (2 marks)

Below is a word equation for a chemical reaction:

hydrochloric acid + sodium hydroxide → sodium chloride + water

2.1 Give the name of one of the **reactants** in this reaction.

_____

_____ 1

2.2 Give the name of one of the **products** in this reaction.

_____

_____ 1

Turn over for the next question.

QUESTION 3 – PARTICLE THEORY (5 marks)

This question is about the particles in solids, liquids, and gases.

3.1 In the box below, draw **eight** circles, ○, to show the arrangement of particles in a **liquid**.

1

3.2 In the box below, draw **eight** circles, ●, to show the arrangement of particles in a **solid**.

1

3.3 Describe how particles move in a **solid**.

_____

_____

1

3.4 Compare the movement of particles in **liquids** and **gases**.

Include one similarity and one difference in your answer.

_____

_____

_____

2

There are no questions printed on this page.

Turn over for the next question.

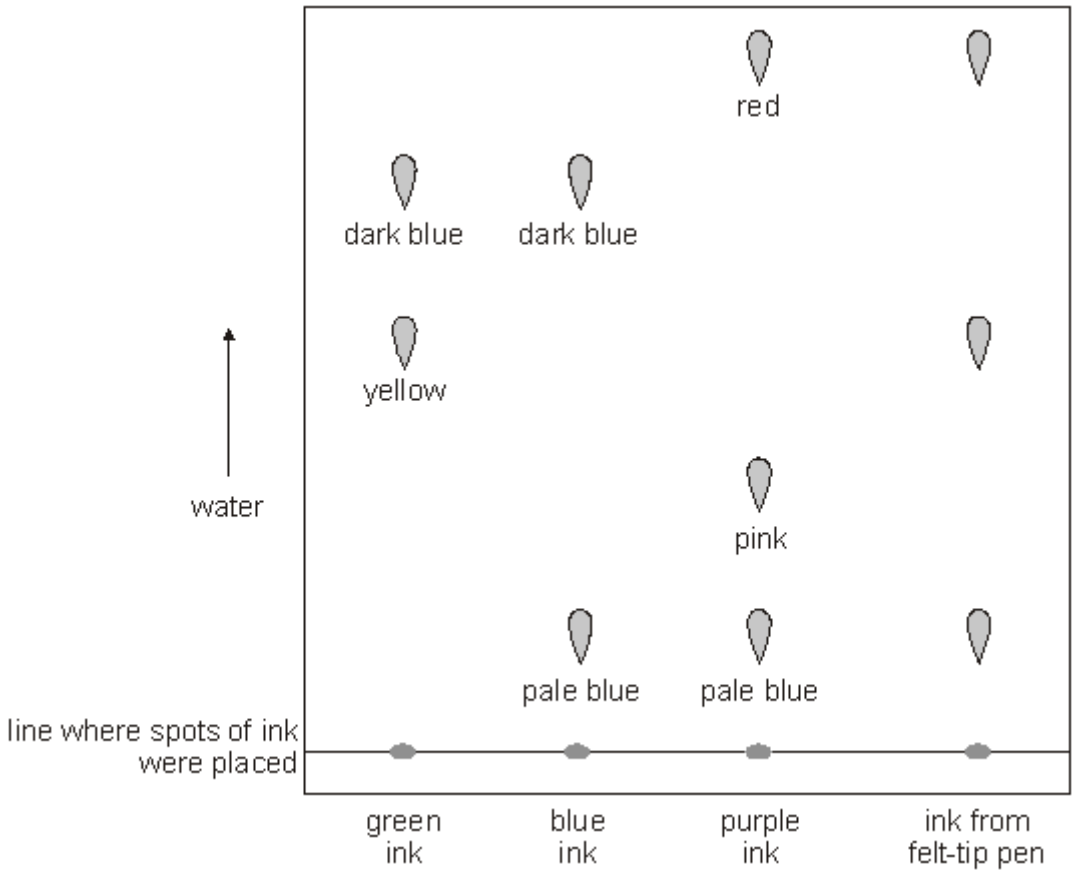
QUESTION 4 – CHROMATOGRAPHY (4 marks)

A student used chromatography to identify the coloured substances in the ink from a felt-tip pen.

She used:

- green ink
- blue ink
- purple ink
- ink from her felt-tip pen.

She used water as the solvent.



Look at the diagram on the opposite page.

4.1 Which colours were present in the ink from the felt-tip pen?

_____

_____ 1

4.2 How many coloured substances were there in purple ink?

_____

How can you tell?

_____ 1

The student placed the spots of ink on a line on the chromatography paper as shown in the diagram.

4.3 Why should she use a **pencil** to draw the line?

_____ 1

The student used water as the solvent in this experiment.

She repeated the experiment with a different set of pens and it did **not** work.

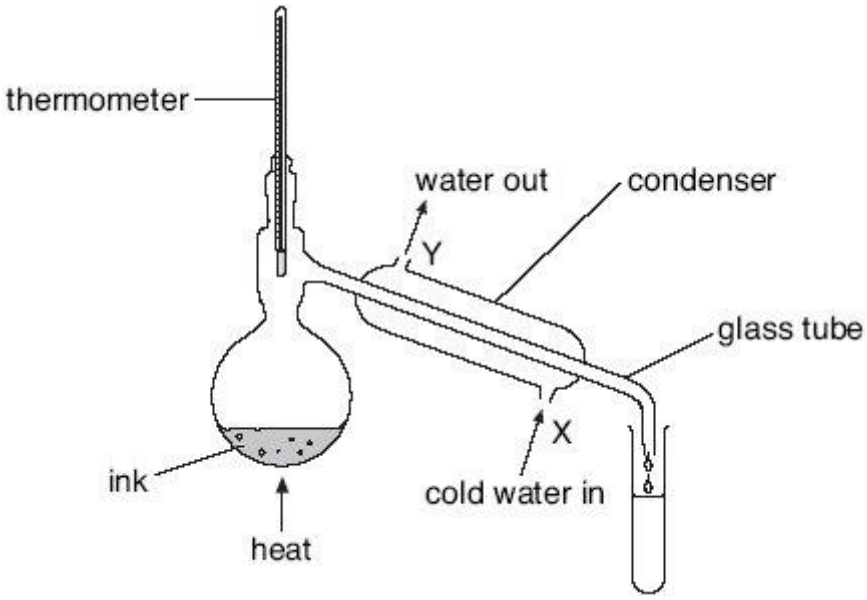
She then used ethanol instead of water.

4.4 Suggest why the experiment worked with ethanol but **not** with water.

_____ 1

QUESTION 5 – DISTILLATION (7 marks)

A teacher used the apparatus below to distil 100 cm^3 of water-soluble ink.



apparatus A

not to scale

5.1 Which changes of state occur during distillation?

Tick the correct box.

condensation then evaporation ☐

evaporation then condensation ☐

melting then boiling ☐

melting then evaporation ☐

1

5.2 Give the name of the colourless liquid that collects in the test-tube.

_____

1

5.3 The ink has been boiling for two minutes.

What would the temperature reading be on the thermometer?

_____°C

1

5.4 Water at 15°C enters the condenser at X.

Suggest what the water temperature will be when it leaves the condenser at Y.

_____°C

Explain this change of temperature.

_____

_____

1

5.5 Give **two** ways in which the water vapour changes as it passes down the glass tube in the condenser.

1.

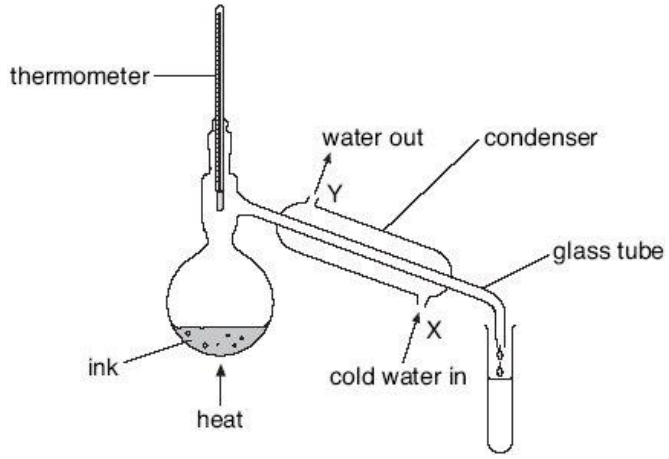
_____

2.

_____

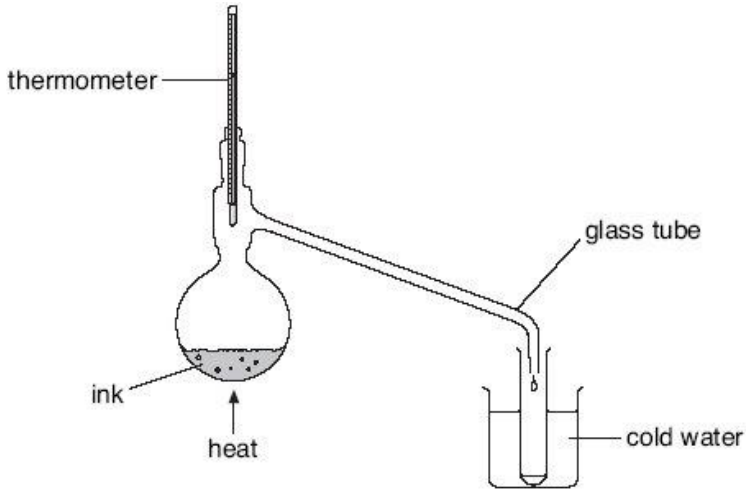
2

Apparatus A is shown again below to help you answer question 5.6



apparatus A

Another teacher used the apparatus below to distil 100 cm^3 of water-soluble ink.



apparatus B

5.6 Why is the condenser in **apparatus A** better than the glass tube and beaker of water in **apparatus B**?

_____

_____

1

QUESTION 6 – pH PRACTICAL (8 marks)

A student added some universal indicator solution to three liquids.

The table below shows some of his results.

6.1 Complete the table of results below.

Liquid	**Colour of Universal Indicator Solution**	**pH**	**Acid, Alkali or Neutral?**	**Strong, Weak or Neither?**
Water	Green			Neither
Sulfuric Acid	Red	1		
Toothpaste	Blue	8		

3

6.2 Explain why using alkalis can be dangerous.

_____

_____

1

6.3 When an acid reacts with an **alkali**, two products are formed.

Complete the equation that describes when an acid reacts with an alkali.

Acid + Alkali → _____ + _____

2

6.4 When an acid reacts with a **metal**, two products are formed.

Complete the equation that describes when an acid reacts with a metal.

Acid + Metal → _____ + _____

2

QUESTION 7 – MELTING INVESTIGATION (11 marks)

A student investigated the effect of volume of an ice cube on how fast it melts.

His independent variable was the volume of the ice cube.

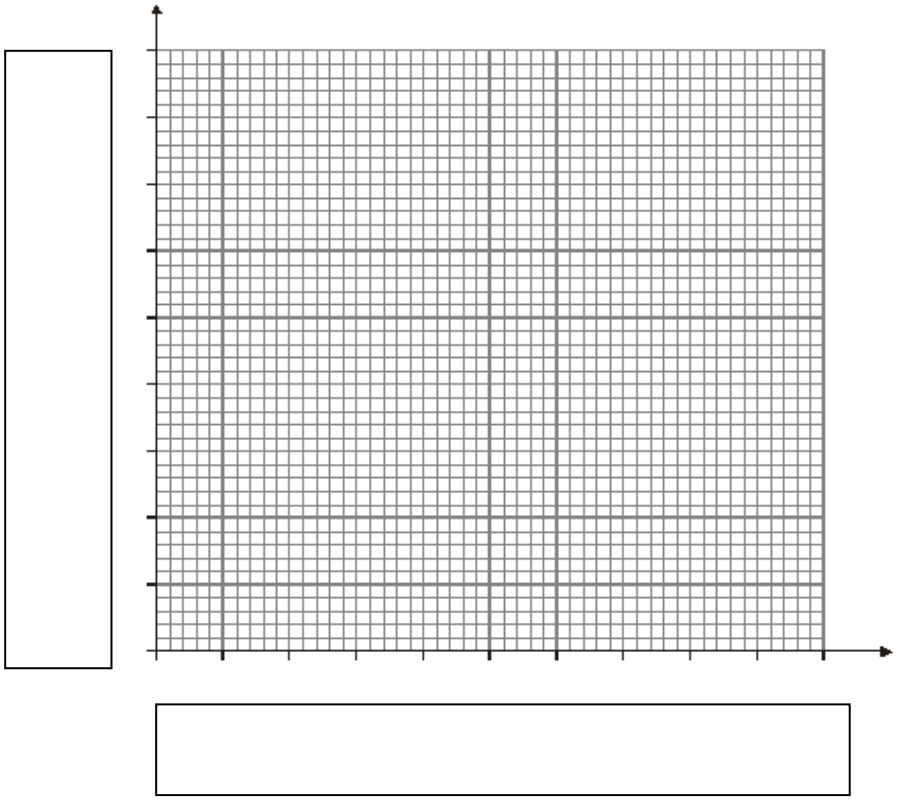
His dependent variable was how fast it melted.

7.1 He drew a graph to plot the data but did not include axis labels.

In the boxes on the graph below **label the axes** for his graph.

Include units.

You do **not** need to add a scale to your graph or plot any data.



2

7.2 The student also kept several variables the same.

What do we call the variables we keep the same in an investigation?

_____ 1

7.3 Suggest one thing he should have kept the same.

_____ 1

7.4 Another student melted an ice cube that had a mass of 13g.

The ice cube completely melted.

What was the mass of liquid water after the ice cube completely melted?

_____ g 1

Explain your answer.

_____

_____ 1

Turn over for the next question.

7.5 Describe the change of state that happens during melting.

Include in your answer a description of what happens to the arrangement **and** movement of particles during melting.

_____

_____

_____

_____

_____

_____

_____ 3

Water is a liquid.

7.6 Water cannot be compressed easily.

Explain why water cannot be compressed easily.

_____

_____

_____ 1

7.7 Explain why water can flow easily.

_____

_____

_____ 1

END OF ASSESSMENT

This is the end of the assessment.
There are no questions printed on this page.