Please check the examination details below before entering your candidate information

Candidate surname	Other names

Centre Number | Candidate Number

Pearson Edexcel Level 1/Level 2 GCSE (9–1)

Monday 18 May 2026

Morning (Time: 1 hour 45 minutes)

Paper reference **1CH0/1F**

Chemistry
PAPER1

Foundation Tier

You must have:
Calculator, ruler, Periodic Table (enclosed)

Total Marks

I nstruc tions

- Use **black** ink or ball-point pen.
  Fill in the boxes at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
  Answer the questions in the spaces provided
  – *there may be more space than you need*.
- Calculators may be used.
- Any diagrams may NOT be accurately drawn, unless otherwise indicated.
  You must **show all your working out** with **your answer clearly identified** at the **end of your solution**.

Information

- The total mark for this paper is 100.
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question*.
- In questions marked with an **asterisk** (*), marks will be awarded for your ability to structure your answer logically, showing how the points that you make are related or follow on from each other where appropriate.

Advice

- Read each questioncarefullybeforeyoustarttoanswerit.
- Try to answereveryquestion.
  Check your answersifyouhavetimeattheend.

Turn over ▶

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Pearson

Answer ALL questions. Write your answers in the spaces provided.

Some questions must be answered with a cross in a box ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒

1 Potassium hydroxide is used in some fuel cells.

(a) The formula of potassium hydroxide is KOH.

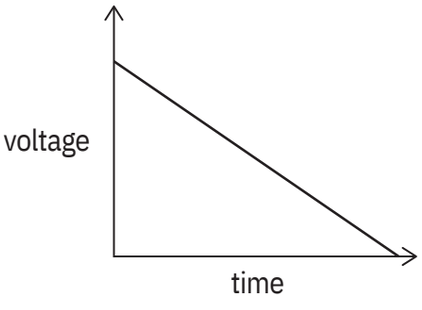
State the number of elements in KOH.

(1)

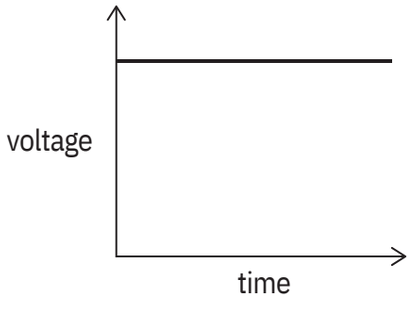
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(b) Figure 1 shows three graphs of how voltage changes with time.

graph **A**



graph **B**



graph **C**

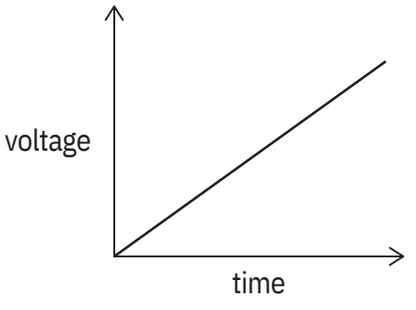


Figure 1

(i) In a fuel cell, a constant voltage is produced if the fuel is supplied all the time.

State which graph represents a fuel cell.

(1)

.....

(ii) Complete the word equation for the overall reaction in a hydrogen-oxygen fuel cell.

(2)

hydrogen + ... → .....

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(c) Potassium hydroxide reacts with acids.

The equation for one of the reactions is

$$KOH + HCl \rightarrow KCl + H_2O$$

(i) Name each product.

(2)

KCl .....

H2O .....

(ii) Calculate the atom economy for the formation of the product KCl.

$$\text{atom economy} = \frac{\text{relative formula mass of wanted product}}{\text{total relative formula mass of all products}} \times 100$$

(relative formula mass of KCl = 74.5,
total relative formula mass of all products = 92.5)

(2)

.....

.....

.....

atom economy = ... %

(Total for Question 1 = 8 marks)

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2 An ink contains a blue dye and water.

(a) Which of these describes the ink?

(1)

- ☒ **A** an element
- ☒ **B** a compound
- ☒ **C** a mixture
- ☒ **D** a salt

(b) The ink is investigated using distillation.

The apparatus is shown in Figure 2.

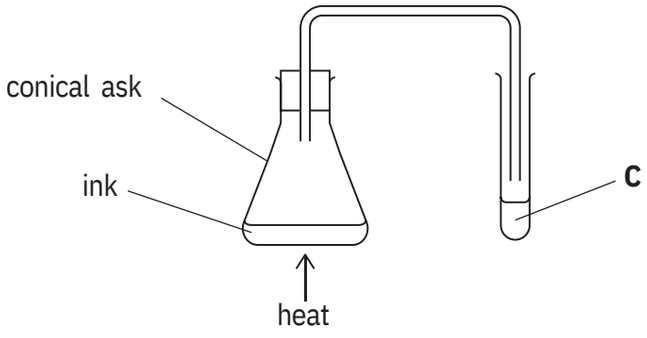


Figure 2

(i) Use words from the box to complete the sentences.

You may use each word once, more than once or not at all.

(3)

Bunsen burner	beaker	blue dye	bung	candle
conical flask	ink	match	test tube	water

The apparatus should be heated using a .....

The liquid labelled **C** is .....

Liquid **C** is collected in a .....

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(ii) The mass of the conical flask and its contents is found at the start of the experiment and at the end of the distillation.

The results are shown in Figure 3.

mass of conical flask and contents at start in g	119.
mass of conical flask and contents at end in g	3

Figure 3

114.

8

Calculate the mass of liquid **C** lost from the conical flask during distillation.

(2)

.....

.....

mass of liquid **C** lost = ... g

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(c) Chromatography is carried out on coloured substances, **P**, **Q** and **R**.

The result is shown in Figure 4.

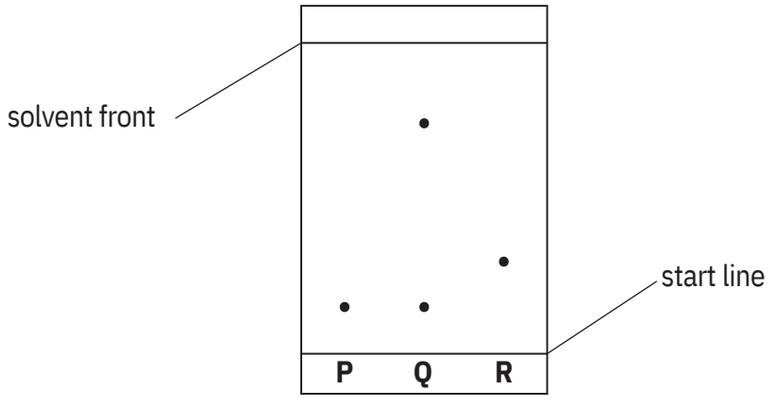


Figure 4

(i) Describe what you can conclude about substance **Q** from Figure 4.

(2)

.....

.....

.....

.....

(ii) Different substances can be identified by calculating their R_f values.

$$\text{Rf value} = \frac{\text{distance a spot moves}}{\text{distance solvent front moves}}$$

Choose a word or words from the box to complete the sentence.

larger	the same	smaller

(1)

Compared to the R_f value of substance **P**, the R_f value of substance **R** is

.....

(Total for Question 2 = 9 marks)

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3 (a) Tick (□) **two** boxes that describe alloys.

(2)

	(□)
alloys are compounds	
alloys are found in the periodic table	
alloys are mixtures of metals	
alloys always contain iron	
alloys are often stronger than pure metals	

(b) One type of alloy steel contains only the elements shown in Figure 5.

metal	percentage by mass of metal in alloy
chromium	25.5
nickel	6.0
molybdenum	3.5
copper	1.8
manganese	1.0
iron	

Figure 5

(i) Calculate the percentage of iron in this alloy steel.

(2)

.....

.....

percentage of iron = ...

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(ii) The manufacture of some fertilisers involves concentrated sulfuric acid.

Suggest **one** reason why an alloy steel is suitable for the containers that will hold concentrated sulfuric acid.

(1)

.....

.....

(c) A student carries out an experiment to see which of two fertilisers, **A** or **B**, is the better fer tiliser.

Equal sized plants of the same type are placed in trays of the same soil.

They are watered regularly.

A solution of fertiliser **A** is added to one tray, a solution of fertiliser **B** is added to another tray, and a third tray has no fertiliser added.

Figure 6 shows the plants after they have been left to grow for some time.



fertiliser **A** | fertiliser **B** | no fertiliser added

Figure 6

(i) Explain how you know that fertiliser **A** is the better fertiliser.

(2)

.....

.....

.....

(ii) State **two** factors that should be kept the same in the experiment so that a fair comparison is made between fertiliser **A** and fertiliser **B**.

(2)

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.....

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(TotalforQuestion 3 = 9 marks)

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4 Oxygen is a gas in the air.

(a) When copper is heated strongly in air, the copper reacts to form copper oxide.

(i) Write the word equation for this reaction.

(2)

..... + ... → .....

(ii) Part of the reactivity series of metals is shown in Figure 7.

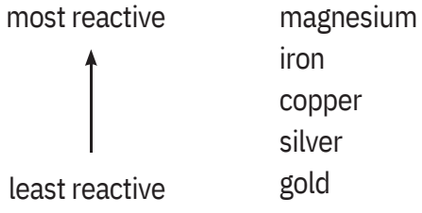


Figure 7

Name a metal **from Figure 7** that reacts more readily than copper with oxygen.

(1)

.....

(b) In 2023 scientists reported making a new isotope of oxygen.

Which statement about isotopes of the same element is correct?

(1)

☒ **A** the atoms have the same number of protons but a different number of electrons

☒ **B** the atoms have the same number of protons but a different number of neutrons

☒ **C** the atoms have a different number of protons but the same number of electrons

☒ **D** the atoms have a different number of protons but the same number of neutrons

(c) Figure 8 shows a dot and cross diagram for a molecule of oxygen.

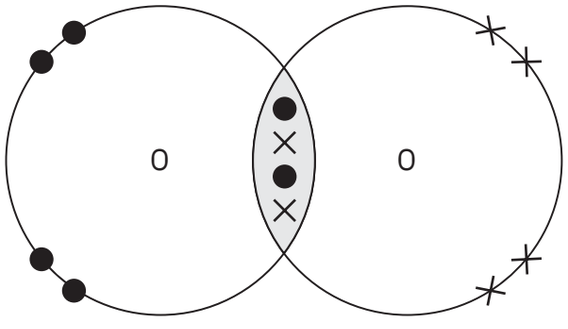


Figure 8

(i) State what is represented by the two dots and two crosses in the shaded area in Figure 8.

(1)

.....

.....

.....

(ii) Give the formula for an oxygen molecule.

(1)

.....

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(d) When iron is extracted from its ore, the overall reaction is

iron oxide + carbon → iron + carbon dioxide

(i) What happens to the iron oxide in this reaction?

(1)

☒ **A** crystallised **B**

☒ neutralised **C**

☒ evaporated **D**

☒ reduced

(ii) Waste iron can be recycled.

Tick (✓) **two** boxes that show advantages of recycling waste iron compared with extracting iron from its ore.

(2)

	(✓)
iron ores are preserved	
more mining is needed	
less damage is caused to animal habitats	
more waste iron will go into landfill	
using waste iron is very expensive	

(Total for Question 4 = 9 marks)

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5 Electrolysis can be used to extract metals from their ores.

(a) Which of these elements is a metal that is usually extracted using electrolysis?

(1)

- ☒ **A** aluminium
- ☒ **B** carbon
- ☒ **C** gold
- ☒ **D** sulfur

(b) Figure 9 shows part of the apparatus used to electrolyse lead bromide.

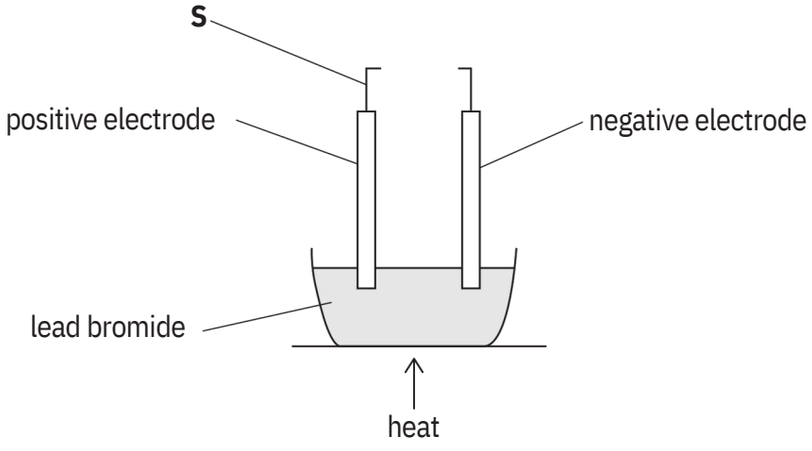


Figure 9

(i) State what must be added to the apparatus so that electrolysis can take place.

(1)

.....

(ii) Name the piece of apparatus labelled **S**.

(1)

.....

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(iii) Explain why the lead bromide has to be heated for the electrolysis to take place.

(2)

(iv) During the electrolysis of lead bromide

- a silver-coloured substance is formed at one electrode
- a red-brown substance is formed at the other electrode.

Identify these substances.

(2)

silver-coloured substance .....

red-brown substance .....

(c) In a different electrolysis experiment, a solution of a solid is electrolysed.

8.6 g of the solid is dissolved in water to make 200 cm^3 of solution.

Calculate the concentration of the solution in g dm^{-3}.

$$\text{concentration in g dm}^{-3} = \frac{\text{mass of solid in g}}{\text{volume of solution in dm}^3}$$

(2)

concentration = ... g dm^{-3}

(Total for Question 5 = 9 marks)

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6 This question is about preparing salts.

(a) In an experiment, barium chloride solution is mixed with sodium sulfate solution.

The word equation is

barium chloride + sodium sulfate → barium sulfate + sodium chloride

The barium sulfate formed is a precipitate.

Give the state symbol used for solid barium sulfate in a chemical equation.

(1)

.....

(b) The apparatus used to separate the solid barium sulfate from the reaction mixture is shown in Figure 10.

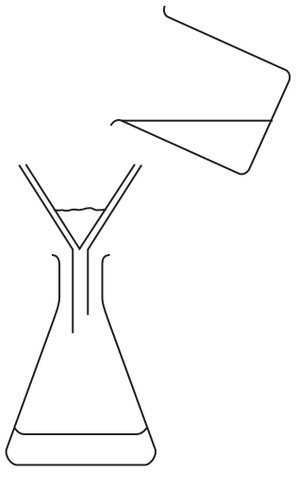


Figure 10

(i) Name this method of separation.

(1)

.....

(ii) On Figure 10 draw a ring around the place where the barium sulfate is found after the separation.

(1)

(iii) Give a reason why the barium sulfate is found in the place where you have drawn a ring.

(1)

.....

.....

.....

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(iv) After the separation, the solid barium sulfate collected is damp.

State how the solid could be dried.

(1)

(c) In another experiment, copper carbonate, $CuCO_3$, is mixed with dilute sulfuric acid.

In this reaction carbon dioxide is formed.

(i) The carbon dioxide gas formed is bubbled through limewater.

State what would be **seen**.

(1)

(ii) The equation for the reaction of copper carbonate with dilute sulfuric acid is

$$CuCO_3 + H_2SO_4 \rightarrow CuSO_4 + H_2O + CO_2$$

Calculate the maximum mass, in kg, of carbon dioxide that could be formed from 370.5 g copper carbonate.

(relative formula masses: $CuCO_3 = 123.5$, $CO_2 = 44$)

(3)

mass of carbon dioxide = ... kg

(Total for Question 6 = 9 marks)

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7 Iron is found in the central part of the periodic table.

(a) Which statement describes iron?

(1)

- ☒ **A** it is a compound
- ☒ **B** it is a mixture
- ☒ **C** it is a non-metal
- ☒ **D** it is a transition metal

(b) Some spoons are electroplated.

(i) Give a reason why some spoons are electroplated.

(1)

.....

.....

.....

(ii) In an experiment, the total mass of **5** spoons is found.

The spoons are electroplated and the new total mass is found.

Figure 11 shows the mass of the **5** spoons before and after electroplating.

mass of 5 spoons before electroplating in g	240.0
mass of 5 spoons after electroplating in g	0

Figure 11

Calculate the **mean** increase in mass for **1** spoon.

258.7

5

(2)

.....

.....

.....

mean increase in mass for **1** spoon = ... g

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(c) A student is carrying out an experiment to find out what causes iron to rust.

Three test tubes, each containing an iron nail, are set up as shown in Figure 12.

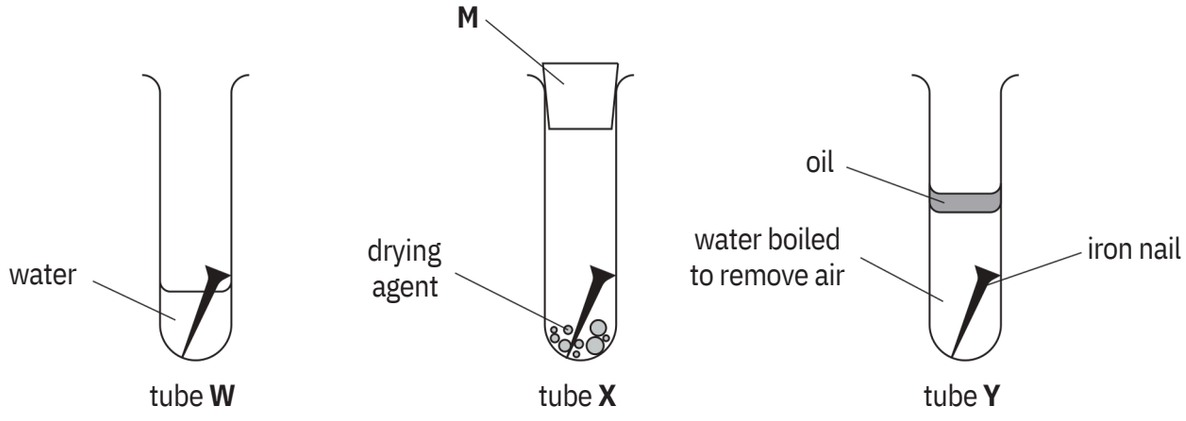


Figure 12

(i) Give the name of the piece of apparatus labelled **M** in Figure 12.

(1)

.....

(ii) Name the apparatus you could use to measure a volume of 2.5 cm^3 of water.

(1)

.....

*(iii) The test tubes containing the iron nails are left for one week.

State and explain what will happen to each of the iron nails in test tubes **W**, **X** and **Y**.

You should

- state whether each nail will rust or not, giving observations that would be made
- explain the different results in the three test tubes.

(6)

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(Total for Question 7 = 12 marks)

8 (a) Crystals of ammonium chloride, NH_4Cl, are heated.

Ammonia, NH_3, and one other product form.

This is a reversible reaction.

Complete the equation for the reaction by adding

- the symbol that shows a reversible reaction in the box
- the missing product on the dotted line.

(2)

NH_4Cl [ ] NH_3 + ...

(b) A student investigates a different reversible reaction using the following method.

The student is wearing gloves and safety goggles.

step 1 add 10 drops of a solution of substance **Z** and 10 cm^3 concentrated sulfuric acid to a test tube

step 2 leave the test tube and then observe the colour of the mixture

step 3 heat the test tube strongly with a Bunsen burner

step 4 observe the new colour of the mixture.

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(i) The bottle containing substance **Z** has the hazard symbols shown in Figure 13.



Figure 13

Which row names **three** of the hazards associated with substance **Z**?

(1)

- ☒ **A** corrosive, explosive, flammable
- ☒ **B** corrosive, oxidising, toxic
- ☒ **C** harmful to the environment, explosive, toxic
- ☒ **D** health hazard, harmful, toxic

(ii) Explain what could be done during **step 3** to make it safer.

(2)

.....

.....

.....

.....

(c) Substance **Z** has the formula $K_2Cr_2O_7$.

Calculate the relative formula mass of $K_2Cr_2O_7$.

(relative atomic masses: K = 39, Cr = 52, O = 16)

(2)

.....

.....

relative formula mass = ...

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(d) Another compound of potassium is potassium chromate, K_2CrO_4.

Calculate the percentage by mass of potassium in potassium chromate.

$$\% \text{ by mass of element} = \frac{\text{total relative atomic masses of the element}}{\text{relative formula mass of compound}} \times 100$$

(relative atomic mass: K = 39;
relative formula mass: K_2CrO_4 = 194)

(2)

.....

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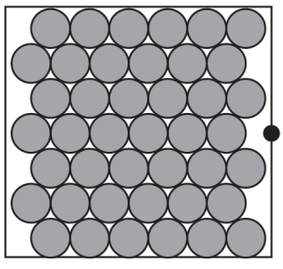
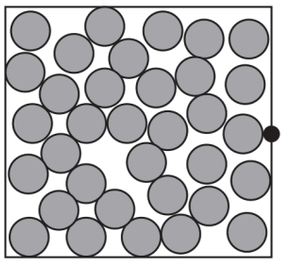
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percentage by mass of potassium = ...

(e) Diagrams can be used to represent substances involved in reversible changes.

Draw **one** straight line from each diagram to the type of substance it represents.

(2)

diagram	**type of substance**
	gas
	liquid
	solid
	solution

(Total for Question 8 = 11 marks)

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9 Use the periodic table to help answer this question.

(a) Give the name of the element in group 6 and period 4 of the periodic table.

(1)

.....

(b) Explain why calcium and strontium have similar chemical properties.

(2)

.....

.....

.....

.....

.....

(c) A compound has the formula MgS.

What is the name of this compound?

(1)

☒ **A** magnesium sulfur **B**

☒ sulfuric magnesium **C**

☒ magnesium sulfate **D**

☒ magnesium sulfide

(d) How did Mendeleev arrange the elements in his periodic table?

(1)

☒ **A** in order of relative atomic mass

☒ **B** in order of atomic number

☒ **C** in alphabetical order

☒ **D** in order of the number of protons in an atom

(e) Give the group number and the period number of the element with electronic configuration 2.8.7

(2)

group number.....

period number.....

*(f) You can decide if an element is a metal or a non-metal by

its position in the periodic table

its structure and bonding

its physical properties such as appearance, malleability and ability to conduct electricity

its chemical properties such as its reaction with a dilute acid.

Explain how these statements show that **magnesium** is a metal.

(6)

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(Total for Question 9 = 13 marks)

10 (a) Ammonia is manufactured by reacting nitrogen with hydrogen.

(i) Name the industrial process used to manufacture ammonia.

(1)

.....

(ii) Which metal is used as a catalyst in the industrial manufacture of ammonia?

(1)

☒ **A** aluminium

☒ **B** iron

☒ **C** lead

☒ **D** platinum

(b) Figure 14 shows how the percentage yield of ammonia at equilibrium at 300 °C changes with pressure.

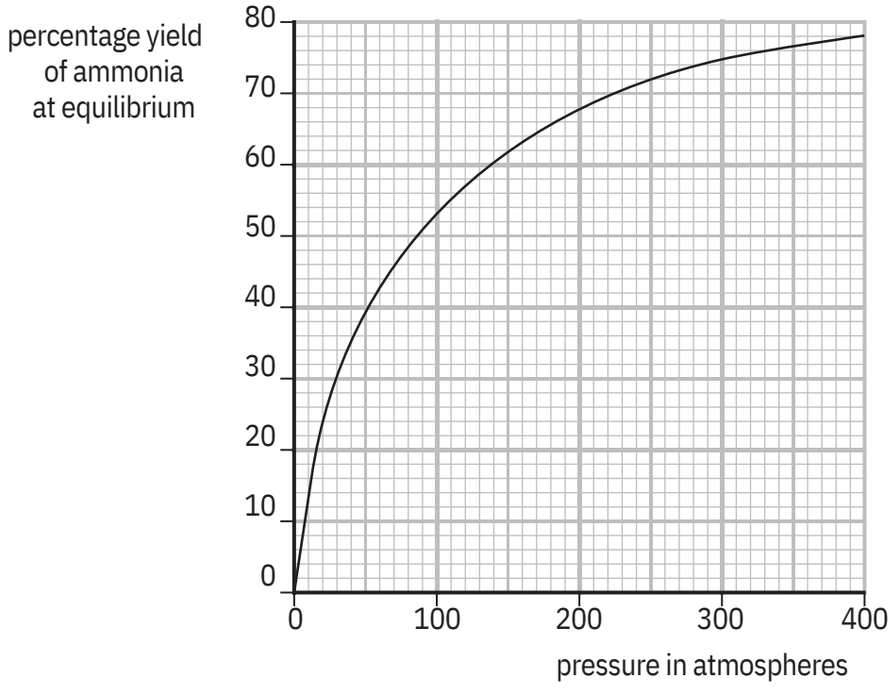


Figure 14

(i) Describe how the percentage yield of ammonia at equilibrium at 300 °C is affected by pressure.

(2)

.....

.....

.....

.....

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(ii) Use Figure 14 to find the percentage yield of ammonia at a pressure of 150 atmospheres at a temperature of 300 °C.

(1)

percentage yield of ammonia = ...

(c) A student carries out a titration to find the volume of dilute sulfuric acid that would neutralise 25 cm^3 of ammonia solution.

(i) Name the salt formed when ammonia solution reacts with dilute sulfuric acid.

(1)

.....

(ii) Give the name of a suitable indicator that could be used in this titration and the colour change that would be seen.

(3)

name of indicator .....

colour from ..... to .....

(iii) Figure 15 shows the student's results.

	titration		
	1	**2**	**3**
final burette reading in cm^3	24.70	49.30	24.60
initial burette reading in cm^3	0.00	24.70	0.00
volume of acid used in cm^3	24.70	24.60	24.60

Figure 15

Calculate the mean volume of dilute sulfuric acid, in cm^3, used in the three titrations.

(2)

.....

.....

.....

mean volume of dilute sulfuric acid = ... cm^3

(Total for Question 10 = 11 marks)

TOTALFORPAPER = 100 MARKS

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Pearson Edexcel Level 1/Level 2 GCSE (9–1)

Monday 18 May 2026

Paper reference **1CH0/1F**

Chemistry

PAPER1

Foundation Tier

Periodic Table Insert
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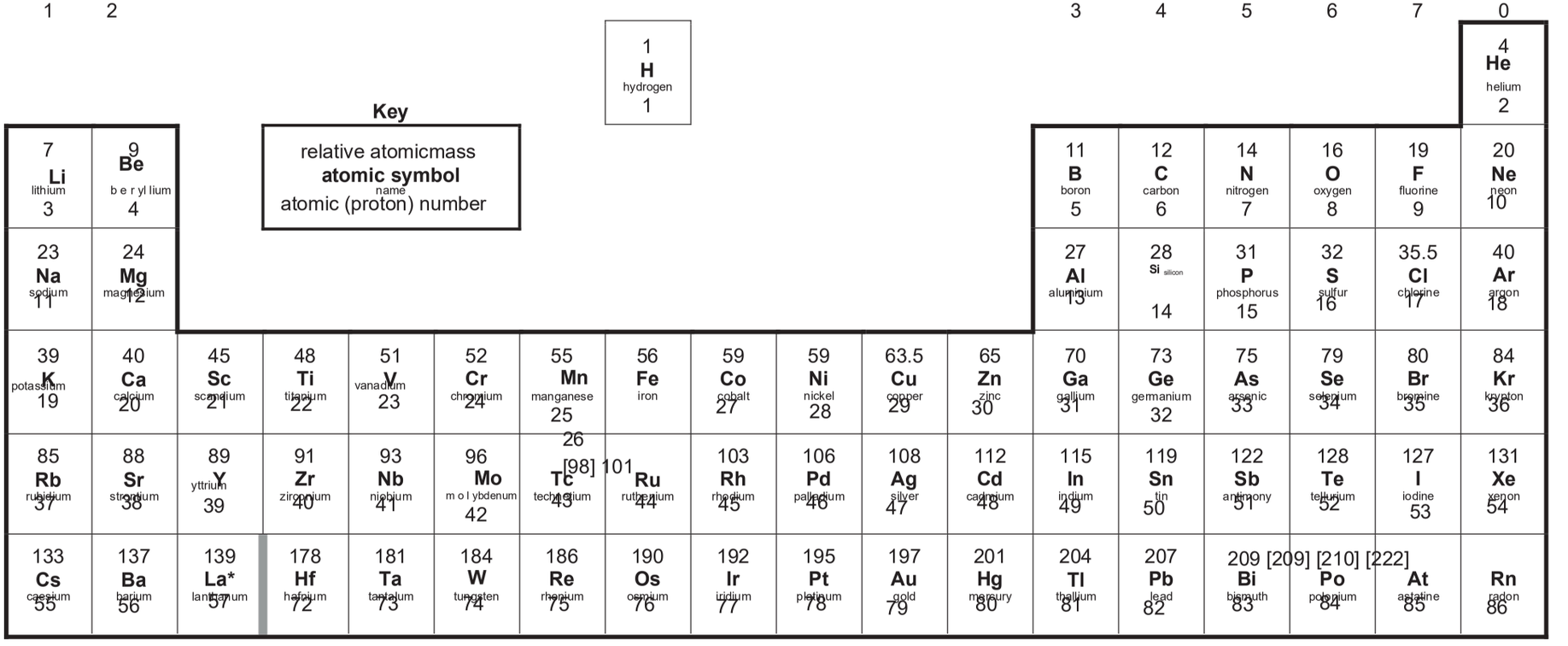
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Pearson

The periodic table of the elements



**** The elements with atomic numbers from 58 to 71 are omitted from this part of the periodic table.***

The relative atomic masses of copper and chlorine have not been rounded to the nearest whole number.