

Cambridge IGCSE™

CHEMISTRY**0620/12**

Paper 1 Multiple Choice (Core)

February/March 2026**45 minutes**

You must answer on the multiple choice answer sheet.

You will need: Multiple choice answer sheet
Soft clean eraser
Soft pencil (type B or HB is recommended)

INSTRUCTIONS

- There are **forty** questions on this paper. Answer **all** questions.
- For each question there are four possible answers **A, B, C** and **D**. Choose the **one** you consider correct and record your choice in soft pencil on the multiple choice answer sheet.
- Follow the instructions on the multiple choice answer sheet.
- Write in soft pencil.
- Write your name, centre number and candidate number on the multiple choice answer sheet in the spaces provided unless this has been done for you.
- Do **not** use correction fluid or tape.
- Do **not** write on any bar codes.
- You may use a calculator.

INFORMATION

- The total mark for this paper is 40.
- Each correct answer will score one mark.
- Any rough working should be done on this question paper.
- The Periodic Table is printed in the question paper.

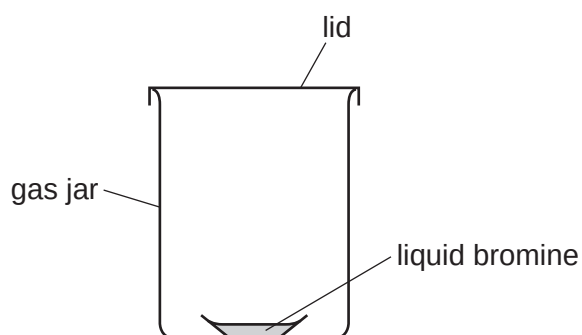
This document has **16** pages.



- 1 Which row shows the conditions for the particles of a gas colliding least frequently?

	pressure	temperature
A	high	high
B	high	low
C	low	high
D	low	low

- 2 Liquid bromine is placed in a sealed gas jar as shown.



After one hour at room temperature, the liquid bromine has1..... .

The gas jar becomes completely full of bromine vapour by a process called2..... .

Which row shows the correct words to complete gaps 1 and 2?

	1	2
A	evaporated	diffusion
B	evaporated	distillation
C	boiled	diffusion
D	boiled	distillation

- 3 Which row identifies an element, a compound and a mixture?

	element	compound	mixture
A	aqueous sodium chloride	potassium iodide	copper
B	iron	potassium bromide	aqueous sodium nitrate
C	potassium bromide	iron	aqueous sodium chloride
D	copper	aqueous sodium nitrate	potassium iodide

- 4 X and Y are both atoms.

X and Y are isotopes of the same element.

Which row describes the atomic structures of X and Y?

	X			Y		
	protons	neutrons	electrons	protons	neutrons	electrons
A	6	6	6	6	6	7
B	6	6	6	6	8	6
C	6	6	6	16	16	16
D	7	6	7	6	6	7

- 5 An atom forms an ion with a positive charge.

Four statements about the atom and the ion are listed.

- 1 The ion is an anion.
- 2 The ion is a cation.
- 3 There are fewer electrons in the ion than in the atom.
- 4 There are more protons in the ion than in the atom.

Which statements are correct?

- A** 1 and 3 **B** 1 and 4 **C** 2 and 3 **D** 2 and 4

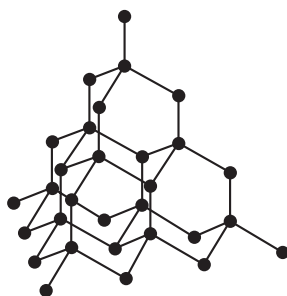
- 6 Which row describes the type of bonding present in substances 1 and 2?

	substance 1	substance 2
A	methane has ionic bonding	hydrogen chloride has covalent bonding
B	hydrogen chloride has ionic bonding	sodium bromide has covalent bonding
C	potassium chloride has ionic bonding	methane has covalent bonding
D	sodium bromide has ionic bonding	potassium chloride has covalent bonding

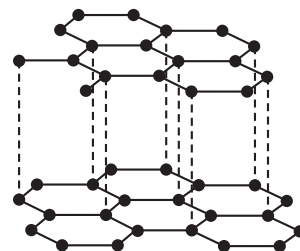
- 7 Diagrams X, Y and Z show part of a polymer structure and two giant covalent structures.



X



Y



Z

Which row shows the structures with the correct use?

	cutting tool	reduce friction
A	Z	Y
B	Y	Z
C	X	Z
D	Z	X

- 8 Aqueous copper(II) chloride reacts with aqueous sodium hydroxide.

What is the equation for this reaction?

- A** $\text{Cu}_2\text{Cl} + 2\text{NaOH} \rightarrow \text{Cu}(\text{OH})_2 + 2\text{NaCl}$
B $\text{Cu}_2\text{Cl} + \text{NaOH} \rightarrow \text{Cu}_2\text{OH} + \text{NaCl}$
C $\text{CuCl}_2 + 2\text{NaOH} \rightarrow \text{Cu}(\text{OH})_2 + 2\text{NaCl}$
D $\text{CuCl}_2 + \text{NaOH} \rightarrow \text{Cu}_2\text{OH} + \text{NaCl}$

- 9 What is the definition of the relative atomic mass, A_r , of an element?

- A** the average mass of the isotopes of the element compared to 1/12th of the mass of an atom of ^{12}C
B the total mass of the isotopes of the element compared to 1/12th of the mass of an atom of ^{12}C
C the average mass of the isotopes of the element compared to the mass of an atom of ^1H
D the total mass of the isotopes of the element compared to the mass of an atom of ^1H

10 Which substance can be used as the electrolyte in an electrolysis experiment?

- A ethanol
- B molten lead
- C graphite
- D aqueous sodium chloride

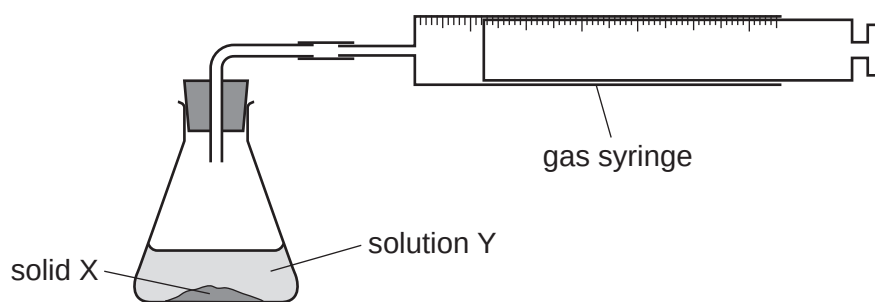
11 What is formed at each electrode when molten sodium oxide, Na_2O , is electrolysed using inert electrodes?

	anode	cathode
A	hydrogen	oxygen
B	sodium	oxygen
C	oxygen	hydrogen
D	oxygen	sodium

12 Which row describes the changes during an endothermic reaction?

	transfer of thermal energy	temperature of the surroundings
A	released to the surroundings	decreases
B	released to the surroundings	increases
C	taken in from the surroundings	decreases
D	taken in from the surroundings	increases

- 13** An experiment is done to find the rate of reaction when 1 g of solid X reacts with 100 cm³ of solution Y.



The experiment takes place too quickly for measurements to be made.

Which change can be made to slow down the reaction?

- A** add a catalyst
 - B** decrease the concentration of solution Y
 - C** decrease the particle size of solid X
 - D** increase the temperature
- 14** Which type of reaction occurs when water reacts with anhydrous cobalt(II) chloride?
- A** reversible
 - B** displacement
 - C** neutralisation
 - D** redox
- 15** Nitrogen and oxygen can form the compound nitrogen(II) oxide.

Which statements about the Roman numeral in nitrogen(II) oxide are correct?

- 1 It indicates that the oxidation number of nitrogen is +2.
 - 2 It indicates that the oxidation number of oxygen is +2.
 - 3 It indicates that the formula for nitrogen(II) oxide contains two nitrogen atoms.
- A** 1 and 3 **B** 1 only **C** 2 and 3 **D** 2 only

16 What is the colour of thymolphthalein in dilute sulfuric acid?

- A** blue
B colourless
C red
D yellow

17 Which row describes a metal oxide and an alkali?

	metal oxide	alkali
A	acidic	insoluble base
B	acidic	soluble base
C	basic	insoluble base
D	basic	soluble base

18 The Periodic Table shows the position of four different elements.

A simplified periodic table with 18 columns and 4 rows. The first two columns are on the left, and the last six columns are on the right, with a gap in between. The elements are labeled as follows:

- Row 1: Column 1 is empty, Column 2 is empty, Column 17 is **A**, Column 18 is empty.
- Row 2: Column 1 is empty, Column 2 is empty, Column 17 is **B**, Column 18 is empty.
- Row 3: Column 1 is **C**, Column 2 is empty, Column 17 is empty, Column 18 is empty.
- Row 4: Column 1 is empty, Column 2 is empty, Column 17 is empty, Column 18 is **D**.

There is an additional empty box above the gap between the two main groups of columns.

Which row is correct?

	element	number of electrons in the outer shell
A	non-metal	1
B	metal	4
C	metal	3
D	non-metal	7

- 19** Rubidium, Rb, is a Group I metal. It has a density of 1.53 g/cm^3 and a melting point of 39°C .

Caesium, Cs, is also a Group I metal.

Which statement gives the melting point and density of caesium?

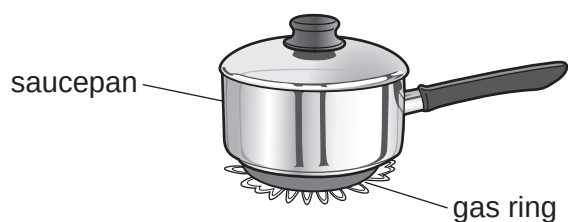
- A** Caesium has a density of 1.20 g/cm^3 and a melting point of 29°C .
 - B** Caesium has a density of 1.20 g/cm^3 and a melting point of 49°C .
 - C** Caesium has a density of 1.90 g/cm^3 and a melting point of 29°C .
 - D** Caesium has a density of 1.90 g/cm^3 and a melting point of 49°C .
- 20** Which statement about iodine is correct?
- A** It is a monatomic non-metallic element.
 - B** It is a solid at room temperature and pressure.
 - C** It is less dense than bromine.
 - D** It is more reactive than chlorine.

- 21** Platinum is a transition metal.

Which statement about platinum is correct?

- A** It does **not** catalyse reactions.
- B** It forms coloured compounds.
- C** It has a low density.
- D** It has a low melting point.

22 Copper is sometimes used to make cooking utensils.



Three properties of copper are listed.

- 1 corrosion resistant
- 2 good conductor of electricity
- 3 good conductor of heat

Which properties make copper a suitable metal for making cooking utensils?

- A** 1 and 3 **B** 1 only **C** 2 and 3 **D** 2 only

23 Magnesium is a typical metal.

Three reactions of magnesium are listed.

- 1 magnesium + oxygen $\rightarrow$ substance X
- 2 magnesium + steam $\rightarrow$ substance X + substance Y
- 3 magnesium + sulfuric acid $\rightarrow$ substance Y + substance Z

What is substance Z?

- A** hydrogen
B magnesium oxide
C magnesium sulfate
D water

24 Which statement explains why stainless steel is used to make cutlery?

- A** It is softer than the pure metal.
B It is more resistant to rusting than the pure metal.
C It is an alloy made of copper and zinc.
D It is more ductile than the pure metal.

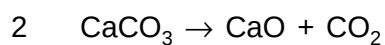
25 Some reactions of three metals are shown in the table.

metal	metal reacts with dilute hydrochloric acid	metal oxide is reduced by carbon
P	yes	yes
Q	yes	no
R	no	yes

What is the order of reactivity of the metals?

	most reactive	→	least reactive
A	P	Q	R
B	P	R	Q
C	Q	P	R
D	R	P	Q

26 Equations 1 and 2 represent two reactions that occur inside a blast furnace.



Which type of reactions are 1 and 2?

	1	2
A	redox	redox
B	redox	thermal decomposition
C	thermal decomposition	redox
D	thermal decomposition	thermal decomposition

27 Four processes are listed.

- 1 filtration
- 2 sedimentation
- 3 distillation
- 4 chlorination

Which processes are used in the treatment of the domestic water supply?

- A** 1, 2 and 3 **B** 1, 2 and 4 **C** 2, 3 and 4 **D** 4 only

28 Which statement explains why river water containing NPK fertilisers is harmful to aquatic life?

- A** NPK fertilisers cause disease in plant and animal life.
- B** NPK fertilisers contain harmful microbes.
- C** NPK fertilisers cause deoxygenation of the water.
- D** NPK fertilisers contain plastic particles.

29 Which gas is approximately 21% of clean, dry air?

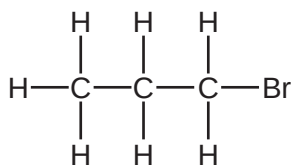
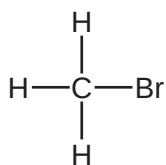
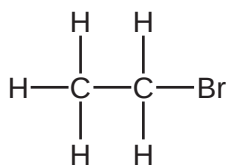
- A** argon
- B** carbon dioxide
- C** nitrogen
- D** oxygen

30 Carbon dioxide is naturally present in the air. An increased amount of carbon dioxide in the air is a cause of global warming.

Which row shows one way to increase and one way to decrease the amount of carbon dioxide in the air?

	increases carbon dioxide	decreases carbon dioxide
A	reduction in livestock farming	using electric cars
B	wind generation of electricity	using solar power
C	using hydrogen as a fuel	burning methane in power stations
D	using diesel vehicles	planting trees

31 The structures of three compounds are shown.



Which statement explains why these three compounds have similar chemical properties?

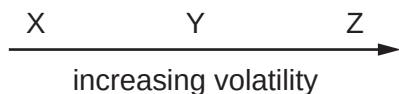
- A They all contain bromine, carbon and hydrogen.
- B They all contain the same functional group.
- C They are all carbon-based molecules.
- D They are all saturated molecules.

32 Which row shows the correct information?

	displayed formula	name	type of compound
A	$\begin{array}{c} \text{H} \quad \text{H} \\ \quad \\ \text{C}=\text{C} \\ \quad \\ \text{H} \quad \text{CH}_3 \end{array}$	ethene	alkene
B	$\begin{array}{c} \text{H} \quad \text{H} \\ \quad \\ \text{H}-\text{C}-\text{C}-\text{O}-\text{H} \\ \quad \\ \text{H} \quad \text{H} \end{array}$	ethanoic acid	alcohol
C	$\begin{array}{c} \text{H} \quad \text{H} \\ \quad \\ \text{H}-\text{C}-\text{C}-\text{H} \\ \quad \\ \text{H} \quad \text{H} \end{array}$	ethane	alkane
D	$\begin{array}{c} \text{H} \\ \\ \text{H}-\text{C}-\text{C} \\ \quad \\ \text{H} \quad \text{O} \\ \quad \quad \\ \quad \quad \text{O}-\text{H} \end{array}$	ethanol	alcohol

33 X, Y and Z are fractions obtained from the fractional distillation of petroleum.

The diagram shows the relative volatility of the fractions.



Which row gives possible uses for these fractions?

	use of fraction X	use of fraction Y	use of fraction Z
A	fuel for diesel engines	chemical feedstock	cooking
B	cooking	fuel for diesel engines	making roads
C	making roads	chemical feedstock	fuel for diesel engines
D	chemical feedstock	making roads	cooking

34 Which statement about alkenes is correct?

- A** Alkenes are saturated molecules containing a C=C double bond.
- B** Alkenes are hydrocarbons with the general formula C_nH_{2n+2} .
- C** Alkenes react with aqueous bromine to give a colour change from brown to colourless.
- D** Alkenes are manufactured from larger alkene molecules in a process called combustion.

35 Ethanol is burned in some camping stoves for cooking.

Which statements about the use of ethanol in camping stoves are correct?

- 1 Ethanol acts as a fuel when it burns.
- 2 Ethanol burns to produce carbon dioxide and hydrogen.
- 3 The reaction that takes place when ethanol burns is exothermic.
- 4 The reaction that takes place when ethanol burns is endothermic.

- A** 1 and 3 **B** 1 and 4 **C** 2 and 3 **D** 2 and 4

36 Which solids react with dilute ethanoic acid to produce a gas?

- 1 sodium
- 2 sodium hydroxide
- 3 sodium oxide
- 4 sodium carbonate

A 1 and 2 **B** 1 and 4 **C** 2 and 3 **D** 3 and 4

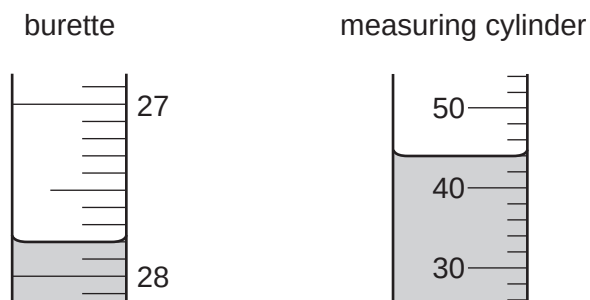
37 Four statements about poly(ethene) are listed.

- 1 It is a plastic.
- 2 It is formed by addition polymerisation.
- 3 It is formed from small molecules called polymers.
- 4 It burns to produce carbon dioxide and hydrogen.

Which statements are correct?

A 1 and 2 **B** 1 and 3 **C** 2 and 3 **D** 3 and 4

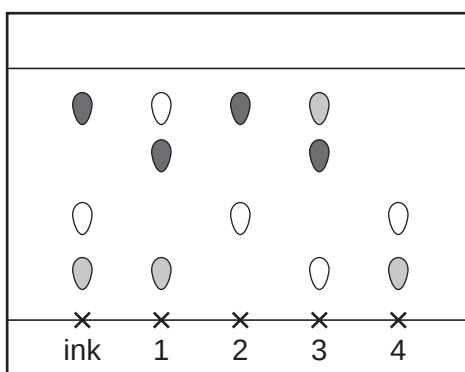
38 The diagrams show liquids in a burette and a measuring cylinder.



Which row shows the correct readings for the burette and the measuring cylinder?

	burette	measuring cylinder
A	27.8	42
B	27.8	44
C	28.2	42
D	28.2	44

- 39 The diagram shows a chromatogram for an ink sample and four other dyes, 1, 2, 3 and 4.



Which dyes could be part of the ink sample?

- A 1 and 2 B 1 and 3 C 2 and 3 D 2 and 4
- 40 Aqueous sodium hydroxide is added to solid X and the mixture is heated.

A green precipitate is formed and an alkaline gas is given off.

Which ions are present in X?

- A NH_4^+ and Fe^{2+}
 B NH_4^+ and Fe^{3+}
 C OH^- and Fe^{2+}
 D OH^- and Fe^{3+}

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