

# Cambridge IGCSE™

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**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)

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**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.

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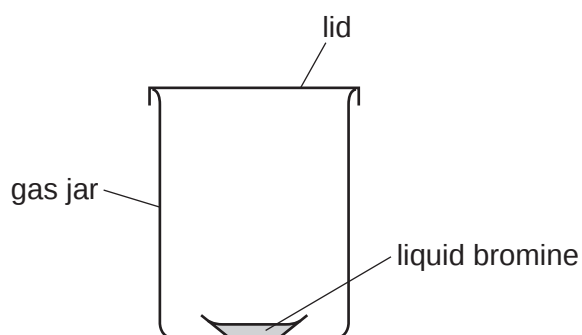
This document has **16** pages.



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

|          | pressure | temperature |
|----------|----------|-------------|
| <b>A</b> | high     | high        |
| <b>B</b> | high     | low         |
| <b>C</b> | low      | high        |
| <b>D</b> | low      | low         |

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



After one hour at room temperature, the liquid bromine has .....1..... .

The gas jar becomes completely full of bromine vapour by a process called .....2..... .

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

|          | 1          | 2            |
|----------|------------|--------------|
| <b>A</b> | evaporated | diffusion    |
| <b>B</b> | evaporated | distillation |
| <b>C</b> | boiled     | diffusion    |
| <b>D</b> | boiled     | distillation |

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

|          | element                 | compound               | mixture                 |
|----------|-------------------------|------------------------|-------------------------|
| <b>A</b> | aqueous sodium chloride | potassium iodide       | copper                  |
| <b>B</b> | iron                    | potassium bromide      | aqueous sodium nitrate  |
| <b>C</b> | potassium bromide       | iron                   | aqueous sodium chloride |
| <b>D</b> | 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 |
| <b>A</b> | 6       | 6        | 6         | 6       | 6        | 7         |
| <b>B</b> | 6       | 6        | 6         | 6       | 8        | 6         |
| <b>C</b> | 6       | 6        | 6         | 16      | 16       | 16        |
| <b>D</b> | 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

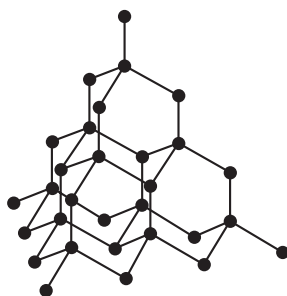
- 6 Which row describes the type of bonding present in substances 1 and 2?

|          | substance 1                          | substance 2                             |
|----------|--------------------------------------|-----------------------------------------|
| <b>A</b> | methane has ionic bonding            | hydrogen chloride has covalent bonding  |
| <b>B</b> | hydrogen chloride has ionic bonding  | sodium bromide has covalent bonding     |
| <b>C</b> | potassium chloride has ionic bonding | methane has covalent bonding            |
| <b>D</b> | sodium bromide has ionic bonding     | potassium chloride has covalent bonding |

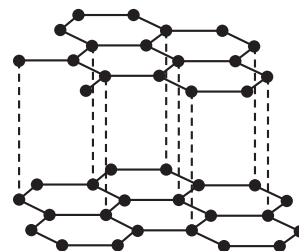
- 7 Diagrams X, Y and Z show part of a polymer structure and two giant covalent structures.



X



Y



Z

Which row shows the structures with the correct use?

|          | cutting tool | reduce friction |
|----------|--------------|-----------------|
| <b>A</b> | Z            | Y               |
| <b>B</b> | Y            | Z               |
| <b>C</b> | X            | Z               |
| <b>D</b> | 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  $^{12}\text{C}$
- B** the total mass of the isotopes of the element compared to 1/12th of the mass of an atom of  $^{12}\text{C}$
- C** the average mass of the isotopes of the element compared to the mass of an atom of  $^1\text{H}$
- D** the total mass of the isotopes of the element compared to the mass of an atom of  $^1\text{H}$

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

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

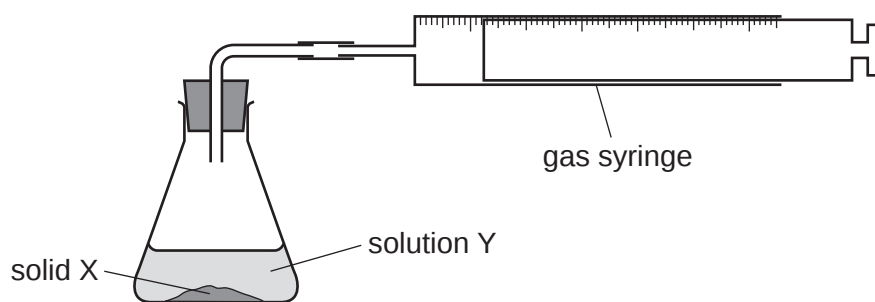
11 What is formed at each electrode when molten sodium oxide,  $\text{Na}_2\text{O}$ , is electrolysed using inert electrodes?

|          | <b>anode</b> | <b>cathode</b> |
|----------|--------------|----------------|
| <b>A</b> | hydrogen     | oxygen         |
| <b>B</b> | sodium       | oxygen         |
| <b>C</b> | oxygen       | hydrogen       |
| <b>D</b> | oxygen       | sodium         |

12 Which row describes the changes during an endothermic reaction?

|          | <b>transfer of thermal energy</b> | <b>temperature of the surroundings</b> |
|----------|-----------------------------------|----------------------------------------|
| <b>A</b> | released to the surroundings      | decreases                              |
| <b>B</b> | released to the surroundings      | increases                              |
| <b>C</b> | taken in from the surroundings    | decreases                              |
| <b>D</b> | 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 cm<sup>3</sup> 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         |
|----------|-------------|----------------|
| <b>A</b> | acidic      | insoluble base |
| <b>B</b> | acidic      | soluble base   |
| <b>C</b> | basic       | insoluble base |
| <b>D</b> | 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. Element C is in the first column, second row. Element A is in the 16th column, second row. Element B is in the 16th column, third row. Element D is in the 18th column, fourth row.

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  $1.53 \text{ g/cm}^3$  and a melting point of  $39^\circ\text{C}$ .

Caesium, Cs, is also a Group I metal.

Which statement gives the melting point and density of caesium?

- A** Caesium has a density of  $1.20 \text{ g/cm}^3$  and a melting point of  $29^\circ\text{C}$ .
- B** Caesium has a density of  $1.20 \text{ g/cm}^3$  and a melting point of  $49^\circ\text{C}$ .
- C** Caesium has a density of  $1.90 \text{ g/cm}^3$  and a melting point of  $29^\circ\text{C}$ .
- D** Caesium has a density of  $1.90 \text{ g/cm}^3$  and a melting point of  $49^\circ\text{C}$ .

**20** Which statement about iodine is correct?

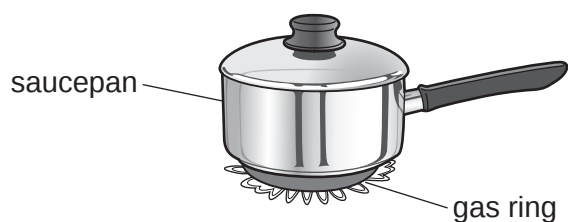
- A** It is a monatomic non-metallic element.
- B** It is a solid at room temperature and pressure.
- C** It is less dense than bromine.
- D** It is more reactive than chlorine.

**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 → substance X
- 2 magnesium + steam → substance X + substance Y
- 3 magnesium + sulfuric acid → 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.

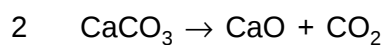
25 Some reactions of three metals are shown in the table.

| 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?

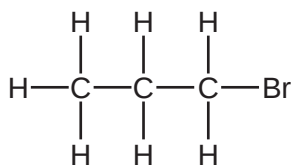
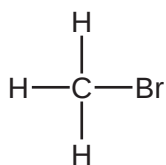
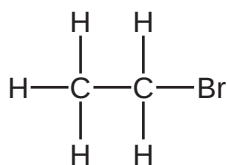
- A** argon
- B** carbon dioxide
- C** nitrogen
- D** oxygen

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          |
|----------|--------------------------------|-----------------------------------|
| <b>A</b> | reduction in livestock farming | using electric cars               |
| <b>B</b> | wind generation of electricity | using solar power                 |
| <b>C</b> | using hydrogen as a fuel       | burning methane in power stations |
| <b>D</b> | using diesel vehicles          | planting trees                    |

31 The structures of three compounds are shown.



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

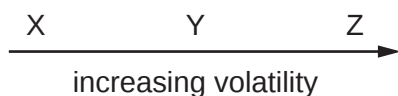
- A They all contain bromine, carbon and hydrogen.
- B They all contain the same functional group.
- C They are all carbon-based molecules.
- D They are all saturated molecules.

32 Which row shows the correct information?

|   | displayed formula                                                                                                                                            | name          | type of compound |
|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------------|
| A | $\begin{array}{c} \text{H} \quad \text{H} \\   \quad / \\ \text{C}=\text{C} \\   \quad \backslash \\ \text{H} \quad \text{CH}_3 \end{array}$                 | 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 | $\begin{array}{c} \text{H} \\   \\ \text{H}-\text{C}-\text{C} \\   \quad // \quad \backslash \\ \text{H} \quad \text{O} \quad \text{O}-\text{H} \end{array}$ | 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       |
|----------|-------------------------|-------------------------|-------------------------|
| <b>A</b> | fuel for diesel engines | chemical feedstock      | cooking                 |
| <b>B</b> | cooking                 | fuel for diesel engines | making roads            |
| <b>C</b> | making roads            | chemical feedstock      | fuel for diesel engines |
| <b>D</b> | 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

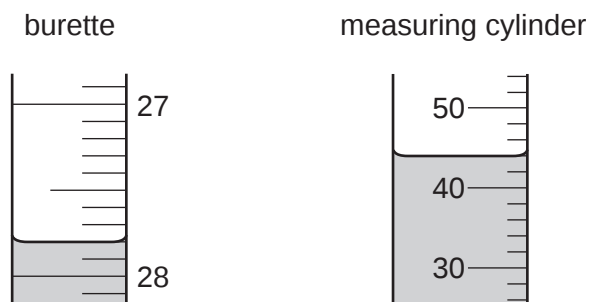
**37** Four statements about poly(ethene) are listed.

- 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

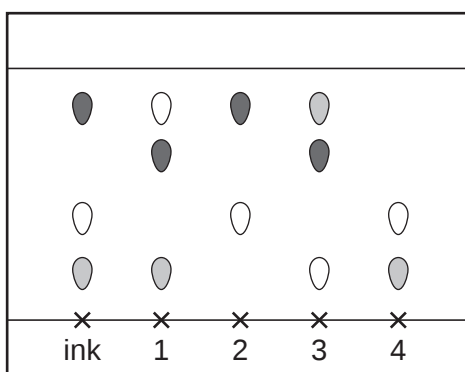
**38** The diagrams show liquids in a burette and a measuring cylinder.



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

|          | burette | measuring cylinder |
|----------|---------|--------------------|
| <b>A</b> | 27.8    | 42                 |
| <b>B</b> | 27.8    | 44                 |
| <b>C</b> | 28.2    | 42                 |
| <b>D</b> | 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  $\text{NH}_4^+$  and  $\text{Fe}^{2+}$   
 B  $\text{NH}_4^+$  and  $\text{Fe}^{3+}$   
 C  $\text{OH}^-$  and  $\text{Fe}^{2+}$   
 D  $\text{OH}^-$  and  $\text{Fe}^{3+}$

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