CAMBRIDGE
International Education

Cambridge O Level

CHEMISTRY **5070/11**

Paper 1 Multiple Choice **May/June 2026**

1 hour

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)

2573847636

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.

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1 A gas occupies a volume of 2.0 dm^3 at room temperature and pressure.

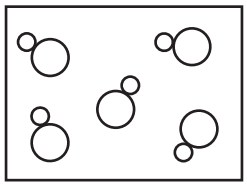
Which changes in the conditions would both decrease the volume occupied by the gas?

	temperature	pressure
A	decreased	decreased
B	increased	decreased
C	decreased	increased
D	increased	increased

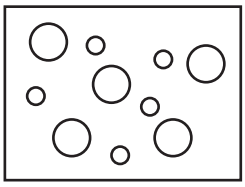
2 In the diagrams, atoms of different elements are represented by different sizes of circle.

Which diagram represents a mixture of nitrogen and argon?

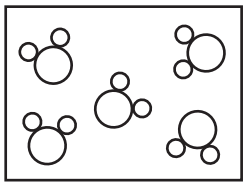
A



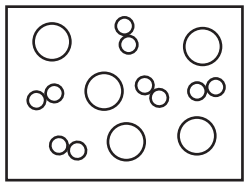
B



C



D



3 The difference between the nucleon number and the proton number indicates the number of .....1..... in the atom.

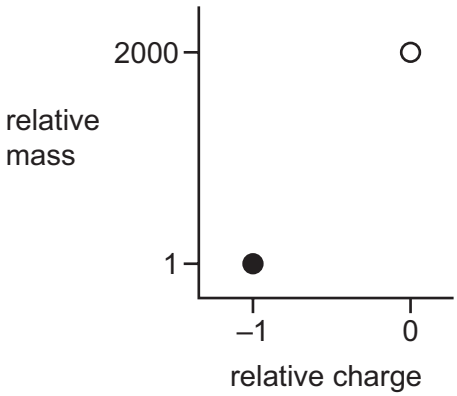
Atoms that have different nucleon numbers but the same proton number are called .....2..... .

Which words correctly complete gaps 1 and 2?

	1	2
A	electrons	isomers
B	electrons	isotopes
C	neutrons	isomers
D	neutrons	isotopes

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4 The diagram shows the relative mass and the relative charge of two particles present in atoms and ions.

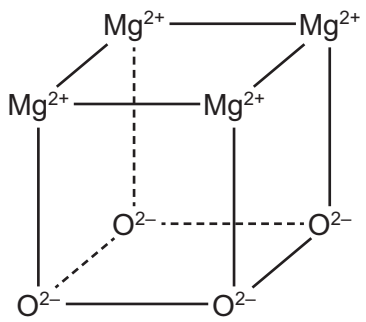


Which of these particles are present in a hydrogen atom and in a hydrogen ion?

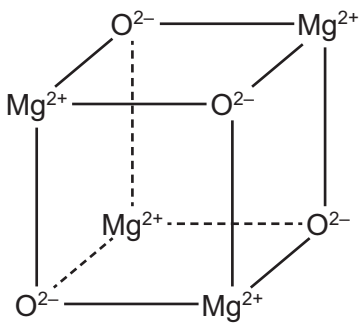
	hydrogen atom	**hydrogen ion**
A	both ○ and ●	both ○ and ●
B	both ○ and ●	○ but **not** ●
C	● but **not** ○	neither ○ nor ●
D	○ but **not** ●	● but **not** ○

5 Which diagram represents magnesium oxide?

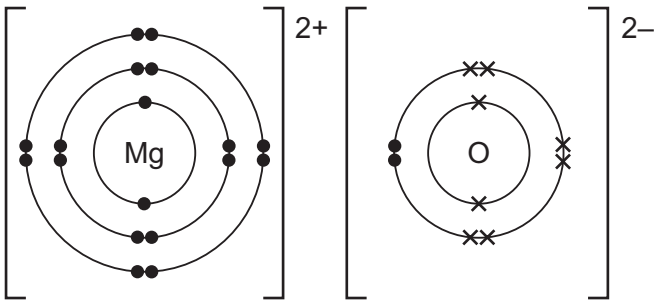
A



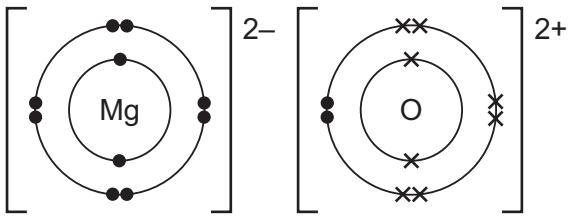
B



C



D



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6 Three statements about graphite and diamond are listed.

1 Graphite and diamond both have giant covalent structures.

2 Graphite is used as a lubricant; diamond is **not** used as a lubricant.

3 Graphite is used to make electrodes; diamond is **not** used to make electrodes.

Which statements are correct?

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

7 Solid element X consists of a lattice of ions surrounded by a 'sea' of delocalised electrons.

Which row is correct?

	X is	**the charges on the ions are**
A	a metal	negative
B	a metal	positive
C	a non-metal	negative
D	a non-metal	positive

8 Which definition of the empirical formula of a compound is correct?

A the number and type of different atoms or ions in one mole of the compound

B the number of different atoms or ions in one mole of the compound

C the relative number of bonds between the different atoms or ions in the compound

D the simplest whole number ratio of the different atoms or ions in the compound

9 Hydrated magnesium sulfate has the formula $MgSO_4 \cdot 7H_2O$.

[A_r: Mg, 24; S, 32; O, 16; H, 1]

Which mass of hydrated magnesium sulfate is needed to make 250 cm^3 of a solution containing 0.50 moles per litre of magnesium ions, Mg^{2+}?

A 15.00 **B** 30.75 **C** 61.50 **D** 123.0

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10 A 3.00 g sample of copper ore containing copper(II) carbonate, $CuCO_3$, and inert rock is heated until there is no change in mass. When cool, the residue weighs 2.20 g.

The equation shows the decomposition of the carbonate.

$$CuCO_3 \rightarrow CuO + CO_2$$

What is the percentage purity of the ore?

A 48.5% **B** 71.5% **C** 75.2% **D** 77.4%

11 A compound contains 40.0% carbon, 6.7% hydrogen and 53.3% oxygen by mass.

The relative molecular mass of the compound is between 55 and 65.

What is the molecular formula of the compound?

A CH_2O **B** C_2H_4O **C** $C_2H_4O_2$ **D** $C_2H_6O_2$

12 Molten sodium chloride is electrolysed.

Which change occurs at the cathode?

A Sodium ions are oxidised.

B Sodium ions are reduced.

C Chloride ions are oxidised.

D Chloride ions are reduced.

13 Three statements about hydrogen–oxygen fuel cells are listed.

1 They produce less carbon dioxide than petrol engines.

2 They produce hydrogen and oxygen as the only chemical products.

3 They are used to generate electricity.

Which statements are correct?

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

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14 Some bond energies are given in the table.

bond	bond energy in kJ / mol
C–C	347
C=C	612
C–H	413
O=O	498
C=O	805
O–H	464

Ethene burns in oxygen to form carbon dioxide and water.

$$C_2H_4 + 3O_2 \rightarrow 2CO_2 + 2H_2O$$

What is the enthalpy change of this reaction?

A –1583 kJ / mol

B –1318 kJ / mol

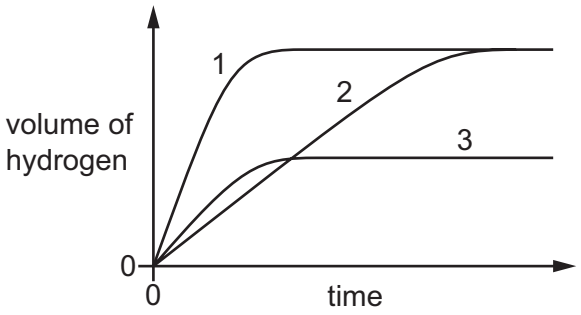
C –655 kJ / mol

D –390 kJ / mol

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15 A student investigates the rate of reaction between magnesium and excess dilute hydrochloric acid by doing three experiments.

The student measures the volume of hydrogen gas produced at regular intervals. The results of the three experiments are shown.



Which statement is correct assuming that all other conditions remain the same in each case?

A Experiment 1 uses the same amount of magnesium as experiment 3, but twice the concentration of hydrochloric acid.

B Experiment 1 uses the same amounts of reactants as experiment 2, but at a higher temperature.

C Experiment 2 uses twice the amount of magnesium as experiment 3, but in the presence of a catalyst.

D Experiment 3 uses the same amounts of reactants as experiment 2, but with powdered magnesium instead of magnesium ribbon.

16 When bismuth(III) chloride, $BiCl_3$, is added to water, a reaction occurs and a white precipitate of $BiOCl$ is formed.

$$BiCl_3(aq) + H_2O(l) \rightleftharpoons BiOCl(s) + 2HCl(aq)$$

Which changes increase the mass of white precipitate formed?

1 adding more water

2 adding aqueous sodium hydroxide

3 adding dilute hydrochloric acid

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

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17 The Haber process is used to make ammonia.

Which catalyst is used in the Haber process?

A iron

B nickel

C platinum

D vanadium(V) oxide

18 Copper(II) hydroxide is insoluble in water.

Rubidium hydroxide is soluble in water.

Which row describes copper(II) hydroxide and rubidium hydroxide?

	copper(II) hydroxide	**rubidium hydroxide**
A	neither a base nor an alkali	a base and an alkali
B	neither a base nor an alkali	an alkali but **not** a base
C	a base but **not** an alkali	a base and an alkali
D	a base but **not** an alkali	an alkali but **not** a base

19 Which ion is present in dilute aqueous propanoic acid?

A $CH_3CH_2COO^+$

B $CH_3CH_2CH_2COO^-$

C H^+

D H^-

20 Caesium is an element in Group I and Period 6 of the Periodic Table.

Which statement is correct?

A Caesium is more dense than lithium.

B Caesium reacts with water to produce a solution with a pH less than 7.

C Caesium reacts less vigorously than lithium with water.

D Caesium melts at a higher temperature than lithium.

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21 Aqueous bromine is added to aqueous potassium iodide.

Which colour is the aqueous bromine and what is the final colour of the reaction mixture?

	colour of aqueous bromine	**final colour of reaction mixture**
A	colourless	orange
B	colourless	brown
C	orange	colourless
D	orange	brown

22 Properties of four elements are listed.

Only one of the elements is a transition element.

Which element is the transition element?

	density in g / cm^3	**melting point / °C**	**acts as a catalyst as the element or in a compound**	**colour of the element**
A	0.01	–71	no	colourless
B	2.01	112	yes	yellow
C	2.46	27	no	silver-grey
D	8.90	1455	yes	silvery white

23 A student makes three statements about the elements in Group VIII of the Periodic Table.

1 Their atoms all have eight electrons in the outer shell.

2 Their molecules are covalently bonded.

3 They all have a boiling point below room temperature.

Which statements are correct?

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

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24 Which statement about aluminium is correct?

A It is used in the electrical wiring of houses because of its high resistance to corrosion and poor electrical conductivity.

B It is used in the manufacture of aircraft because of its high ductility and high density.

C It is used in overhead electrical cables because of its good electrical conductivity and poor resistance to corrosion.

D It is used in food containers because of its high malleability and high resistance to corrosion.

25 Which statement is correct?

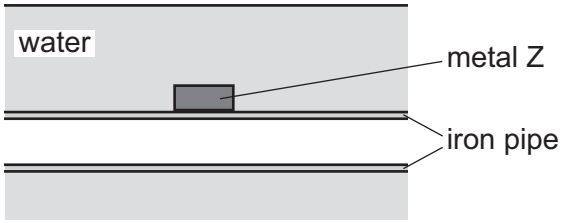
A Copper displaces magnesium from aqueous magnesium sulfate.

B Carbon reacts with magnesium oxide; carbon dioxide is one product of this reaction.

C Iron displaces silver from aqueous silver nitrate.

D Hydrogen reacts with zinc oxide; water is one product of this reaction.

26 The diagram shows how an underwater iron pipe can be protected from rusting.



Metal Z can be .....1..... because it is .....2..... reactive than iron.

Which words correctly complete gaps 1 and 2?

	1	2
A	copper	less
B	copper	more
C	magnesium	less
D	magnesium	more

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27 Process 1: Iron is extracted from hematite in a blast furnace.

Process 2: Aluminium is extracted from purified bauxite in an electrolytic cell.

Which statements are correct for **both** processes?

1 An oxide in the ore is reduced.
2 Carbon reacts with oxygen to form carbon dioxide.
3 Impurities are removed as slag.
4 Thermal decomposition takes place.

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

28 A solution of sodium chloride in water is tested with anhydrous copper(II) sulfate and anhydrous cobalt(II) chloride.

The boiling point of the solution at 1 atm pressure is also measured.

Which row is correct?

	colour change with copper(II) sulfate	**colour change with cobalt(II) chloride**	**boiling point / °C**
A	blue to pink	white to blue	100
B	blue to pink	white to blue	>100
C	white to blue	blue to pink	100
D	white to blue	blue to pink	>100

29 NPK fertilisers are used to provide three elements for improved plant growth.

Which mixture of compounds contains all three of these elements?

A ammonium nitrate and calcium phosphate
B calcium phosphate and potassium sulfate
C potassium nitrate and calcium phosphate
D potassium sulfate and ammonium sulfate

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30 Which row about carbon dioxide and methane is correct?

	both contain carbon	both are greenhouse gases	both lower the pH of water when they dissolve in it
A	✓	✗	✓
B	✓	✓	✗
C	✗	✓	✓
D	✗	✓	✗

31 The structural formulae of three compounds are listed.

1 CH_3COOH

2 $HCOOCH_3$

3 CH_3CH_2OH

Which compounds are carboxylic acids?

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

32 A hydrocarbon, Q, has molecular formula C_xH_y.

Q reacts with hydrogen to form a single product with molecular formula C_xH_{y+2}.

Which statement about Q is correct?

A Q does **not** burn in air.

B Q is a saturated hydrocarbon.

C Q reacts with bromine to form a single product with molecular formula $C_xH_{y-1}Br$.

D Q reacts with steam to form a single product with molecular formula $C_xH_{y+2}O$.

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33 Propane is an alkane that can react with chlorine.

Which statement is correct?

A Two of the products of the reaction between propane and chlorine have the molecular formula C_3H_7Cl.

B Each carbon atom in a propane molecule has only one pair of bonding electrons.

C The reaction between propane and chlorine is an example of photosynthesis with ultraviolet radiation providing the activation energy.

D Propane can undergo combustion, substitution and addition reactions depending on the conditions.

34 How can alkenes be manufactured?

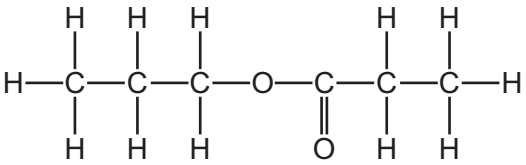
A by polymerisation reactions

B by the addition of hydrogen to unsaturated vegetable oils

C by the combustion of alkanes

D by the cracking of hydrocarbons

35 The displayed formula of an ester is shown.



Which acid and which alcohol react to form this ester?

	acid	alcohol
A	ethanoic acid	ethanol
B	ethanoic acid	propan-1-ol
C	propanoic acid	ethanol
D	propanoic acid	propan-1-ol

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36 Nylon and poly(ethene) are formed by polymerisation reactions.

Which other products, if any, are formed during the two polymerisation reactions?

	other product formed with nylon	other product formed with poly(ethene)
A	none	none
B	none	water
C	water	none
D	water	water

37 Solution X is made by adding solid glucose to liquid ethanol in a beaker. This mixture is stirred.

After stirring, solid glucose is visible at the bottom of the beaker.

The amount of solid glucose present is **not** changed by repeated stirring.

Which substance is the solute and how is solution X described?

	solute	solution X
A	ethanol	saturated
B	ethanol	unsaturated
C	glucose	saturated
D	glucose	unsaturated

38 Which piece of apparatus is used to add one reagent to another reagent during a titration?

A burette

B conical flask

C measuring cylinder

D volumetric pipette

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39 Chromatography is used to separate and identify dyes in a mixture.

Which statement is correct?

A A dye can have an R_f value of 1.2.

B A dye can have different R_f values with different solvents.

C All blue dyes have the same R_f value.

D Chromatography can **only** be used for coloured substances such as dyes.

40 J is an aqueous solution.

When aqueous sodium hydroxide is added to J, a green precipitate is formed.

The resulting mixture is heated, and no gas is formed.

Aluminium foil is added to the warmed mixture. A gas is formed that turns damp red litmus paper blue.

Which ions does J contain?

A Fe^{3+} and NH_4^+

B Fe^{3+} and NO_3^-

C Fe^{2+} and NH_4^+

D Fe^{2+} and NO_3^-

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The Periodic Table of Elements

Group																	
I	II											III	IV	V	VI	VII	VIII
							1 H hydrogen 1										2 He helium 4
3 Li lithium 7	4 Be beryllium 9											5 B boron 11	6 C carbon 12	7 N nitrogen 14	8 O oxygen 16	9 F fluorine 19	10 Ne neon 20
11 Na sodium 23	12 Mg magnesium 24											13 Al aluminium 27	14 Si silicon 28	15 P phosphorus 31	16 S sulfur 32	17 Cl chlorine 35.5	18 Ar argon 40
19 K potassium 39	20 Ca calcium 40	21 Sc scandium 45	22 Ti titanium 48	23 V vanadium 51	24 Cr chromium 52	25 Mn manganese 55	26 Fe iron 56	27 Co cobalt 59	28 Ni nickel 59	29 Cu copper 64	30 Zn zinc 65	31 Ga gallium 70	32 Ge germanium 73	33 As arsenic 75	34 Se selenium 79	35 Br bromine 80	36 Kr krypton 84
37 Rb rubidium 85	38 Sr strontium 88	39 Y yttrium 89	40 Zr zirconium 91	41 Nb niobium 93	42 Mo molybdenum 96	43 Tc technetium –	44 Ru ruthenium 101	45 Rh rhodium 103	46 Pd palladium 106	47 Ag silver 108	48 Cd cadmium 112	49 In indium 115	50 Sn tin 119	51 Sb antimony 122	52 Te tellurium 128	53 I iodine 127	54 Xe xenon 131
55 Cs caesium 133	56 Ba barium 137	57–71 lanthanoids	72 Hf hafnium 178	73 Ta tantalum 181	74 W tungsten 184	75 Re rhenium 186	76 Os osmium 190	77 Ir iridium 192	78 Pt platinum 195	79 Au gold 197	80 Hg mercury 201	81 Tl thallium 204	82 Pb lead 207	83 Bi bismuth 209	84 Po polonium –	85 At astatine –	86 Rn radon –
87 Fr francium –	88 Ra radium –	89–103 actinoids	104 Rf rutherfordium –	105 Db dubnium –	106 Sg seaborgium –	107 Bh bohrium –	108 Hs hassium –	109 Mt meitnerium –	110 Ds darmstadtium –	111 Rg roentgenium –	112 Cn copernicium –	113 Nh nihonium –	114 Fl flerovium –	115 Mc moscovium –	116 Lv livermorium –	117 Ts tennessine –	118 Og oganesson –

Key

atomic number
atomic symbol
name
relative atomic mass

lanthanoids	57 La lanthanum 139	58 Ce cerium 140	59 Pr praseodymium 141	60 Nd neodymium 144	61 Pm promethium –	62 Sm samarium 150	63 Eu europium 152	64 Gd gadolinium 157	65 Tb terbium 159	66 Dy dysprosium 163	67 Ho holmium 165	68 Er erbium 167	69 Tm thulium 169	70 Yb ytterbium 173	71 Lu lutetium 175
actinoids	89 Ac actinium –	90 Th thorium 232	91 Pa protactinium 231	92 U uranium 238	93 Np neptunium –	94 Pu plutonium –	95 Am americium –	96 Cm curium –	97 Bk berkelium –	98 Cf californium –	99 Es einsteinium –	100 Fm fermium –	101 Md mendelevium –	102 No nobelium –	103 Lr lawrencium –

The volume of one mole of any gas is 24 dm^3 at room temperature and pressure (r.t.p.).