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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.

This document has **16** pages.

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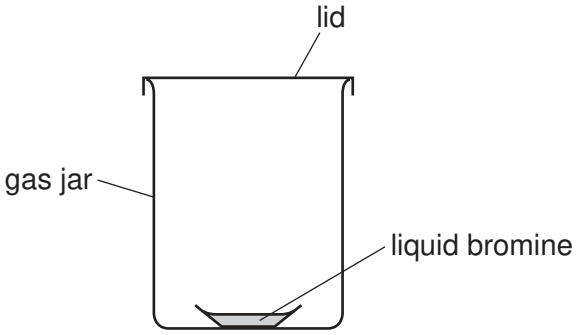
1 Which row shows the conditions for the particles of a gas colliding least frequently?

	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 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
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

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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

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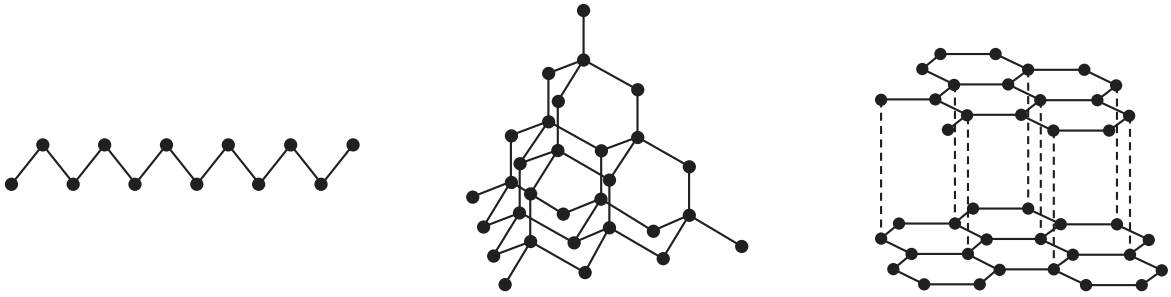
7 Diagrams X, Y and Z show part of a polymer structure and two giant covalent structures.



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 $Cu_2Cl + 2NaOH \rightarrow Cu(OH)_2 + 2NaCl$

B $Cu_2Cl + NaOH \rightarrow Cu_2OH + NaCl$

C $CuCl_2 + 2NaOH \rightarrow Cu(OH)_2 + 2NaCl$

D $CuCl_2 + NaOH \rightarrow Cu_2OH + NaCl$

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 ^{1}H

D the total mass of the isotopes of the element compared to the mass of an atom of ^{1}H

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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

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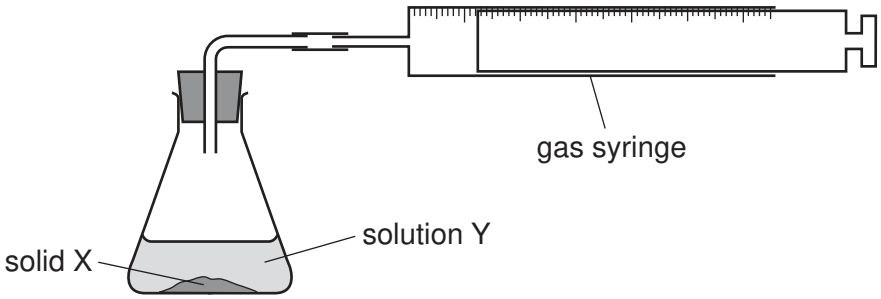
13 An experiment is done to find the rate of reaction when 1 g of solid X reacts with 100 cm^3 of solution Y.



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

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

A blue

B colourless

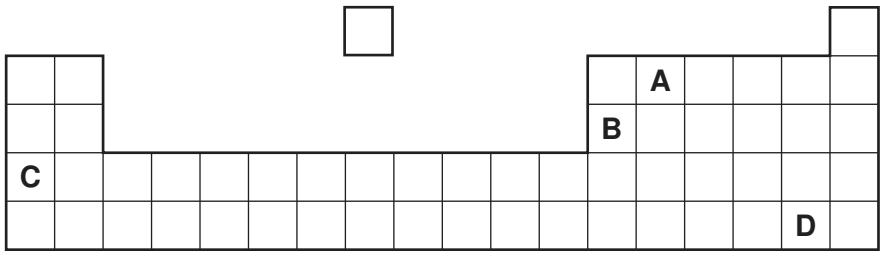
C red

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.



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

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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.

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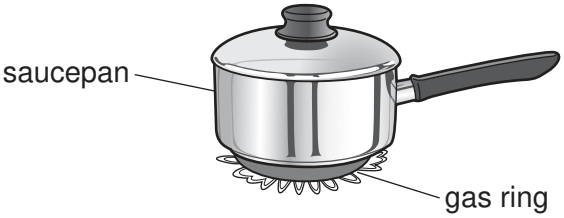
22 Copper is sometimes used to make cooking utensils.



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.

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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.

1 $Fe_2O_3 + 3CO \rightarrow 2Fe + 3CO_2$

2 $CaCO_3 \rightarrow CaO + CO_2$

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

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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

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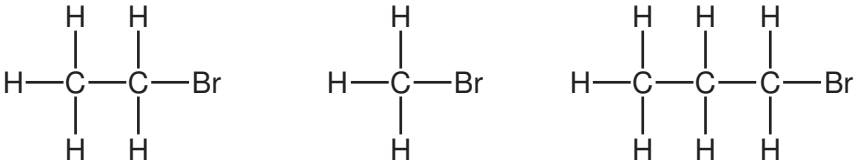
31 The structures of three compounds are shown.



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

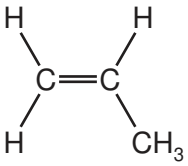
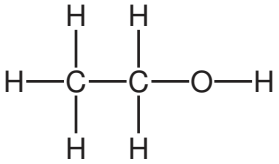
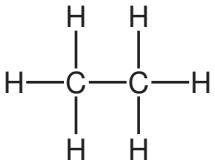
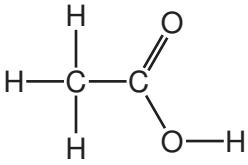
A They all contain bromine, carbon and hydrogen.

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		ethene	alkene
B		ethanoic acid	alcohol
C		ethane	alkane
D		ethanol	alcohol

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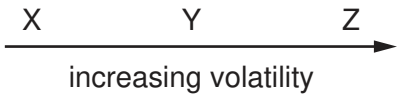
33 X, Y and Z are fractions obtained from the fractional distillation of petroleum.

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

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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.

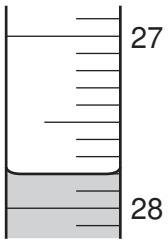
1 It is a plastic.
2 It is formed by addition polymerisation.
3 It is formed from small molecules called polymers.
4 It burns to produce carbon dioxide and hydrogen.

Which statements are correct?

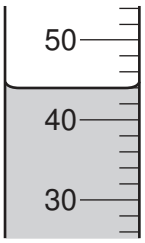
A 1 and 2 **B** 1 and 3 **C** 2 and 3 **D** 3 and 4

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

burette



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

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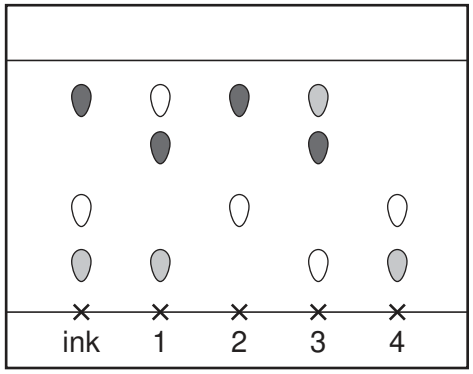
39 The diagram shows a chromatogram for an ink sample and four other dyes, 1, 2, 3 and 4.



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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The Periodic Table of Elements

Key

atomic number
atomic symbol
name
relative atomic mass

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 117	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 Cr copernicium –		114 Fl flerovium –		116 Lv livermorium –		

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.)

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