



# Cambridge International AS & A Level

**CHEMISTRY**

**9701/13**

Paper 1 Multiple Choice

**October/November 2022**

**1 hour 15 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.
- 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.
- Important values, constants and standards are printed in the question paper.

This document has **16** pages. Any blank pages are indicated.



- 1 Which sample contains the same number of the named species as the number of molecules in 35.5 g of chlorine?
- A atoms in 16 g of sulfur  
B atoms in 23 g of sodium  
C ions in 74.5 g of potassium chloride  
D molecules in 88 g of carbon dioxide
- 2 Mixture R consists of one mole of  $C_3H_6$  and one mole of  $C_4H_6$ .  
What is the minimum number of moles of oxygen molecules needed for complete combustion of mixture R?
- A 6.5                      B 7                      C 10                      D 20
- 3 Which statement about the electrons in a ground state carbon atom is correct?
- A Electrons are present in four different energy levels.  
B There are more electrons in p orbitals than there are in s orbitals.  
C The occupied orbital of highest energy is spherical.  
D The occupied orbital of lowest energy is spherical.
- 4 For the element sulfur, which pair of ionisation energies has the largest difference between them?
- A third and fourth ionisation energies  
B fourth and fifth ionisation energies  
C fifth and sixth ionisation energies  
D sixth and seventh ionisation energies
- 5 How many  $\sigma$  bonds are present in one  $H-C\equiv C-C(CH_3)=CH(CH_3)$  molecule?
- A 5                      B 11                      C 13                      D 16
- 6 Which molecule has an equal number of bonding electrons and lone-pair electrons?
- A  $BH_3$                       B  $CO_2$                       C  $F_2O$                       D  $SO_2$

7 The table shows properties of four solids held together by different types of bonding.

Which row correctly describes the properties of a solid with a giant covalent structure?

	melting point	solubility in polar solvents
<b>A</b>	high	insoluble
<b>B</b>	high	soluble
<b>C</b>	low	insoluble
<b>D</b>	low	soluble

8 The carbonate of an s-block element is reacted with an excess of hydrochloric acid.

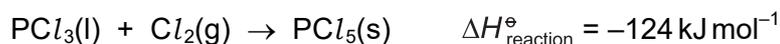
0.833 g of the carbonate releases 200 cm<sup>3</sup> of gas, measured under room conditions.

What is the identity of the metal carbonate?

**A** Na<sub>2</sub>CO<sub>3</sub>      **B** K<sub>2</sub>CO<sub>3</sub>      **C** MgCO<sub>3</sub>      **D** CaCO<sub>3</sub>

9 The enthalpy changes of formation,  $\Delta H_f^\ominus$ , of both PCl<sub>3</sub> and PCl<sub>5</sub> are exothermic.

PCl<sub>3</sub> reacts with chlorine.



Which pair of statements is correct?

	statement 1	statement 2
<b>A</b>	$\Delta H_{\text{reaction}}^\ominus$ is less negative than $\Delta H_f^\ominus(\text{PCl}_5)$ .	The Cl <sub>2</sub> bond energy is needed in calculating $\Delta H_{\text{reaction}}^\ominus$ from enthalpies of formation.
<b>B</b>	$\Delta H_{\text{reaction}}^\ominus$ is more negative than $\Delta H_f^\ominus(\text{PCl}_5)$ .	The Cl <sub>2</sub> bond energy is needed in calculating $\Delta H_{\text{reaction}}^\ominus$ from enthalpies of formation.
<b>C</b>	$\Delta H_{\text{reaction}}^\ominus$ is less negative than $\Delta H_f^\ominus(\text{PCl}_5)$ .	The Cl <sub>2</sub> bond energy is not needed in calculating $\Delta H_{\text{reaction}}^\ominus$ from enthalpies of formation.
<b>D</b>	$\Delta H_{\text{reaction}}^\ominus$ is more negative than $\Delta H_f^\ominus(\text{PCl}_5)$ .	The Cl <sub>2</sub> bond energy is not needed in calculating $\Delta H_{\text{reaction}}^\ominus$ from enthalpies of formation.

- 10 A student mixes  $25.0\text{ cm}^3$  of  $0.350\text{ mol dm}^{-3}$  sodium hydroxide solution with  $25.0\text{ cm}^3$  of  $0.350\text{ mol dm}^{-3}$  hydrochloric acid. The temperature increases by  $2.5^\circ\text{C}$ . No heat is lost to the surroundings.

The final mixture has a specific heat capacity of  $4.2\text{ J cm}^{-3}\text{ K}^{-1}$ .

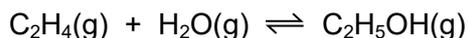
What is the molar enthalpy change for the reaction?

- A  $-150\text{ kJ mol}^{-1}$   
 B  $-60\text{ kJ mol}^{-1}$   
 C  $-30\text{ kJ mol}^{-1}$   
 D  $-0.15\text{ kJ mol}^{-1}$
- 11 Ammonium ions are converted into nitrate ions by bacteria.
- What is the change in the oxidation number of nitrogen?
- A  $-6$                       B  $+6$                       C  $+8$                       D  $+9$
- 12 Sodium dichromate(VI),  $\text{Na}_2\text{Cr}_2\text{O}_7$ , reacts with hydrogen peroxide,  $\text{H}_2\text{O}_2$ , producing  $\text{Cr}^{3+}$  ions, water and oxygen.

What is the correctly balanced ionic equation for this reaction?

- A  $\text{Cr}_2\text{O}_7^{2-} + 2\text{H}^+ + \text{H}_2\text{O}_2 \rightarrow 2\text{Cr}^{3+} + 2\text{H}_2\text{O} + 4\text{O}_2$   
 B  $\text{Cr}_2\text{O}_7^{2-} + 8\text{H}^+ + 3\text{H}_2\text{O}_2 \rightarrow 2\text{Cr}^{3+} + 7\text{H}_2\text{O} + 3\text{O}_2$   
 C  $\text{Cr}_2\text{O}_7^{2-} + 8\text{H}^+ + 6\text{H}_2\text{O}_2 \rightarrow 2\text{Cr}^{3+} + 10\text{H}_2\text{O} + 6\text{O}_2$   
 D  $\text{Cr}_2\text{O}_7^{2-} + 14\text{H}^+ + 3\text{H}_2\text{O}_2 \rightarrow 2\text{Cr}^{3+} + 7\text{H}_2\text{O} + 3\text{O}_2$
- 13 In which equilibrium reaction is the position of equilibrium moved to the right-hand side by increasing the temperature and also by decreasing the pressure?
- A  $\text{H}_2(\text{g}) + \text{CO}_2(\text{g}) \rightleftharpoons \text{H}_2\text{O}(\text{g}) + \text{CO}(\text{g}) \quad \Delta H = 40\text{ kJ mol}^{-1}$   
 B  $\text{N}_2\text{O}_4(\text{g}) \rightleftharpoons 2\text{NO}_2(\text{g}) \quad \Delta H = 58\text{ kJ mol}^{-1}$   
 C  $2\text{SO}_2(\text{g}) + \text{O}_2(\text{g}) \rightleftharpoons 2\text{SO}_3(\text{g}) \quad \Delta H = -197\text{ kJ mol}^{-1}$   
 D  $2\text{HI}(\text{g}) \rightleftharpoons \text{H}_2(\text{g}) + \text{I}_2(\text{g}) \quad \Delta H = -10\text{ kJ mol}^{-1}$

- 14 Ethanol is produced industrially by reacting ethene and steam.



$K_p$  has a value of  $1.8 \times 10^{-5}$  and the partial pressures of the reactants at equilibrium are shown.

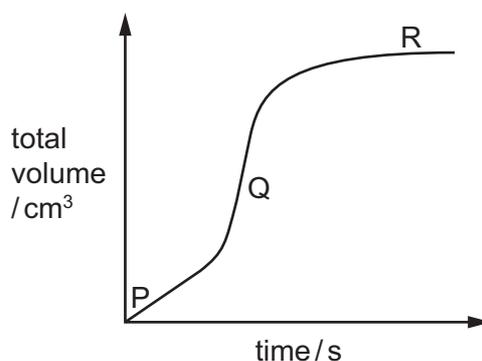
reactant	partial pressure / kPa
ethene	$4.8 \times 10^3$
steam	$2.8 \times 10^3$

Which row is correct?

	partial pressure of ethanol at equilibrium / kPa	units of $K_p$
<b>A</b>	$2.42 \times 10^2$	$\text{kPa}^{-1}$
<b>B</b>	$2.42 \times 10^2$	kPa
<b>C</b>	$7.47 \times 10^{11}$	$\text{kPa}^{-1}$
<b>D</b>	$7.47 \times 10^{11}$	kPa

- 15 A large excess of magnesium ribbon is added to dilute hydrochloric acid and the volume of hydrogen gas produced is measured as the reaction proceeds. The reaction is exothermic.

The results are shown.

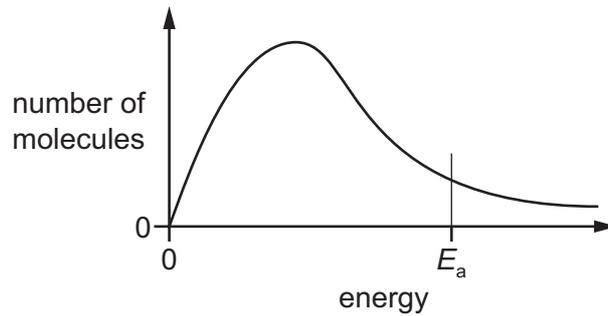


Which row explains the changes in the rate of reaction between points P and Q and between points Q and R?

	between points P and Q	between points Q and R
<b>A</b>	the reaction temperature is increasing	the acid concentration is falling
<b>B</b>	the reaction temperature is increasing	the magnesium has been used up
<b>C</b>	magnesium's surface area is decreasing	the acid concentration is falling
<b>D</b>	magnesium's surface area is decreasing	the magnesium has been used up

16 Measurements are made to determine the activation energy,  $E_a$ , of a reaction.

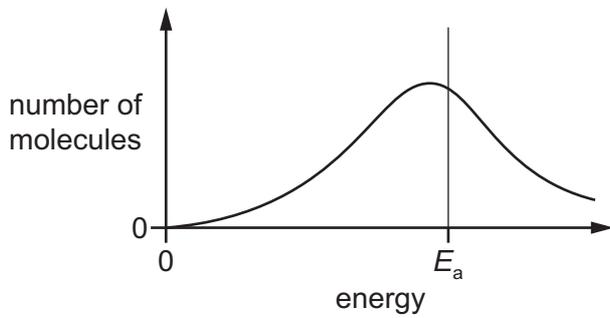
The diagram shows  $E_a$  on the Boltzmann distribution at temperature  $T_1$ .



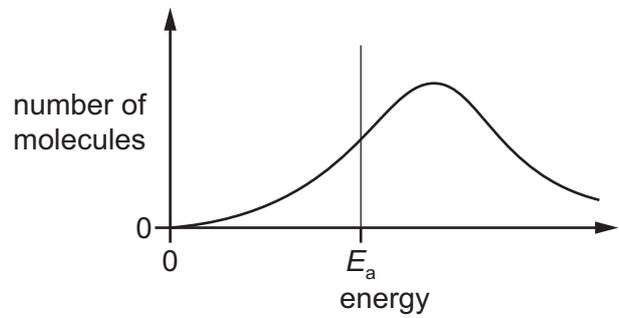
Measurements are then made at a higher temperature,  $T_2$ .

Which diagram correctly shows the Boltzmann distribution and  $E_a$  at  $T_2$ ?

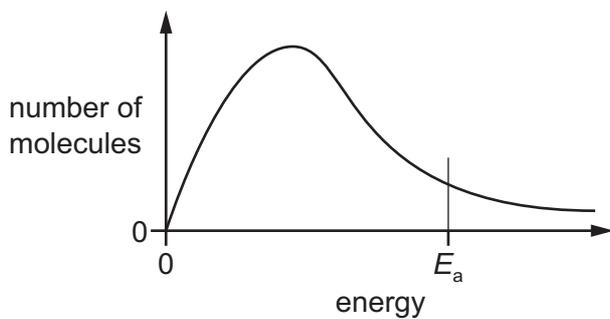
**A**



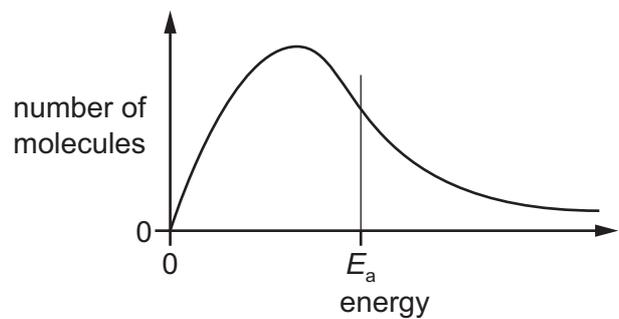
**B**



**C**



**D**



17 The electrical conductivities of two compounds, Y and Z, are shown.

	for Y	for Z
conductivity of the compound in the liquid state	good	does not conduct
conductivity of the mixture obtained by adding the compound to water	good	good

What are compounds Y and Z?

	Y	Z
<b>A</b>	$Al_2O_3$	$SiCl_4$
<b>B</b>	$NaCl$	$Al_2O_3$
<b>C</b>	$NaCl$	$SiCl_4$
<b>D</b>	$SiCl_4$	$Al_2O_3$

18 Which row describes the relative sizes of the ionic radii of  $Na^+$ ,  $Mg^{2+}$  and  $S^{2-}$ ?

	smallest	→	largest
<b>A</b>	$Na^+$		$S^{2-}$
<b>B</b>	$Mg^{2+}$		$S^{2-}$
<b>C</b>	$S^{2-}$		$Mg^{2+}$
<b>D</b>	$S^{2-}$		$Na^+$

19 The oxides  $BaO$ ,  $CaO$ ,  $MgO$  and  $SrO$  all produce alkaline solutions when added to water.

Which oxide produces the saturated solution with the highest pH?

**A**  $BaO$                       **B**  $CaO$                       **C**  $MgO$                       **D**  $SrO$

20 Which row is correct?

	the temperature needed to decompose Group 2 metal nitrates	the solubility of Group 2 sulfates
<b>A</b>	decreases down the group	decreases down the group
<b>B</b>	decreases down the group	increases down the group
<b>C</b>	increases down the group	increases down the group
<b>D</b>	increases down the group	decreases down the group

- 21 Which statement about Group 17 elements and compounds is correct?
- A** Sodium chloride produces chlorine when reacted with concentrated sulfuric acid.
- B** Sodium chloride produces chlorine when reacted with bromine.
- C** Sodium bromide produces bromine when reacted with concentrated sulfuric acid.
- D** Sodium bromide produces bromine when reacted with iodine in aqueous potassium iodide.
- 22 Chlorine is bubbled through  $100\text{ cm}^3$  of hot  $4.0\text{ mol dm}^{-3}$  sodium hydroxide until the reaction is complete.



Which row is correct?

	$x$	$[\text{Na}^+(\text{aq})]$ after reaction / $\text{mol dm}^{-3}$
<b>A</b>	3	4.0
<b>B</b>	3	less than 4.0
<b>C</b>	6	4.0
<b>D</b>	6	less than 4.0

- 23 Which statement about ammonia or the ammonium ion is correct?
- A** Ammonia gas is produced when an aqueous solution containing the ammonium ion is reacted with a strong acid.
- B** Silver iodide is soluble in a concentrated aqueous solution of ammonia.
- C** The ammonium ion has the same number of electrons as a methane molecule.
- D** The square planar ammonium ion contains a dative covalent bond.
- 24 Sulfur dioxide can be catalytically oxidised by an oxide of nitrogen in the atmosphere.

Which reaction shows how the catalyst is reformed?

- A**  $\text{N}_2 + 2\text{O}_2 \rightleftharpoons 2\text{NO}_2$
- B**  $4\text{NH}_3 + 5\text{O}_2 \rightarrow 4\text{NO} + 6\text{H}_2\text{O}$
- C**  $\text{N}_2 + \text{O}_2 \rightarrow 2\text{NO}$
- D**  $\text{NO} + \frac{1}{2}\text{O}_2 \rightarrow \text{NO}_2$

- 25 Separate 1.0 g samples of  $\text{Na}_2\text{O}$ ,  $\text{MgO}$ ,  $\text{Al}_2\text{O}_3$ ,  $\text{SiO}_2$ ,  $\text{NaCl}$ ,  $\text{MgCl}_2$ ,  $\text{Al}_2\text{Cl}_6$  and  $\text{SiCl}_4$  are added to separate beakers containing water and stirred.

The number of beakers containing a white solid is Q.

An excess of  $\text{NaOH}(\text{aq})$  is then added to each beaker and stirred.

The number of beakers now containing a white solid is R.

Which row is correct?

	Q	R
<b>A</b>	3	2
<b>B</b>	3	3
<b>C</b>	4	3
<b>D</b>	4	4

- 26 Which pair of alcohols are isomers of each other?

- A** butan-1-ol and 2,2-dimethylpropan-1-ol  
**B** butan-2-ol and 2-methylpropan-2-ol  
**C** pentan-1-ol and 2-methylpropan-2-ol  
**D** propan-2-ol and 2-methylpropan-2-ol

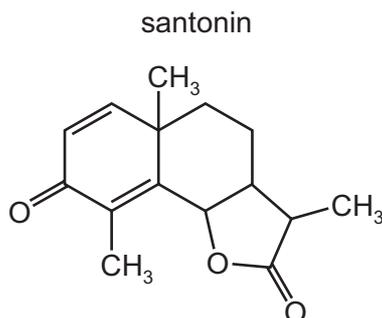
- 27 How many chiral carbon atoms are there in one molecule of 2,2,4,5-tetramethylhexan-3-ol?

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

- 28 Which pair of reagents react together in a redox reaction?

- A**  $\text{CH}_3\text{CHCH}_2 + \text{Br}_2$   
**B**  $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH} + \text{concentrated H}_3\text{PO}_4$   
**C**  $\text{CH}_3\text{COCH}_3 + \text{HCN}$   
**D**  $\text{HCO}_2\text{C}_2\text{H}_5 + \text{dilute H}_2\text{SO}_4$

29 The structure of santonin is shown.



Santonin is first treated with warm dilute  $\text{H}_2\text{SO}_4$ . The product of this reaction is treated with cold dilute acidified  $\text{KMnO}_4$ . A final product, Q, is obtained.

How many atoms of hydrogen in each molecule of product Q will react with sodium metal?

- A** 2                      **B** 4                      **C** 5                      **D** 6

30 Compound R can be formed from 1-bromopropane using a nucleophilic substitution reaction followed by an oxidation reaction.

What is the identity of R?

- A** propanoic acid  
**B** propanone  
**C** propylamine  
**D** propyl ethanoate

31 Three colourless liquids with the following formulae are contained in separate unlabelled bottles.

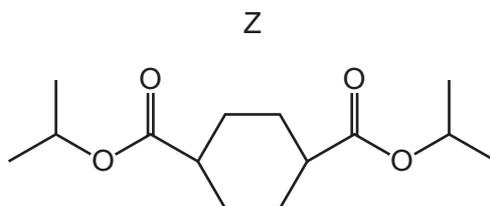


Which two tests, carried out on separate samples of each liquid, will successfully identify each liquid?

	test 1	test 2
<b>A</b>	$\text{NaHCO}_3$	2,4-DNPH reagent
<b>B</b>	$\text{NaHCO}_3$	Tollens' reagent
<b>C</b>	warm acidified dichromate	2,4-DNPH reagent
<b>D</b>	warm acidified dichromate	Tollens' reagent

32 An alcohol, X, reacts with a dicarboxylic acid, Y, to form a double ester, Z.

The diagram shows the structure of the ester.



Which row about the reactants forming ester Z is correct?

	the class of alcohol X	the shape of the ring in Y
<b>A</b>	secondary	non-planar
<b>B</b>	secondary	planar
<b>C</b>	tertiary	non-planar
<b>D</b>	tertiary	planar

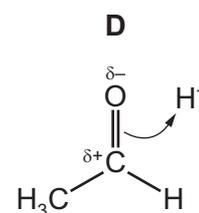
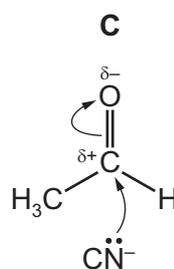
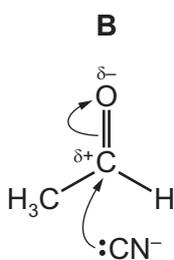
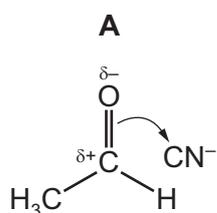
33 W reacts with alkaline  $I_2(aq)$  to form a yellow precipitate and  $CH_3CH_2CO_2^-$  ions.

Which row identifies W and the yellow precipitate?

	identity of W	identity of yellow precipitate
<b>A</b>	butanone	$CHI_3$
<b>B</b>	butanone	$CH_3I$
<b>C</b>	propanone	$CHI_3$
<b>D</b>	propanone	$CH_3I$

34 Ethanal reacts with hydrogen cyanide in the presence of KCN to produce a hydroxynitrile.

What is the first step in the mechanism of this reaction?

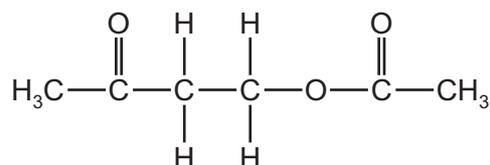


35 Structural isomerism and stereoisomerism should be considered when answering this question.

How many isomeric compounds with molecular formula  $C_5H_6O_4$  contain two  $-CO_2H$  groups and one  $C=C$  double bond?

- A 5                      B 6                      C 7                      D 8

36 Compound X reacts with ethanoic acid in the presence of an  $H^+$  catalyst to produce the compound shown.



What is the molecular formula of compound X?

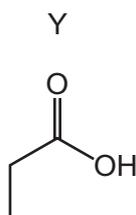
- A  $C_2H_4O$               B  $C_2H_6O_2$               C  $C_4H_8O$               D  $C_4H_8O_2$

37 2-bromopropane reacts with hot ethanolic sodium hydroxide.

Which substance is the major product of this reaction?

- A propan-1-ol  
 B propan-2-ol  
 C 2-hydroxypropene  
 D propene

38 Which compounds can be used to make Y in a single-step reaction?

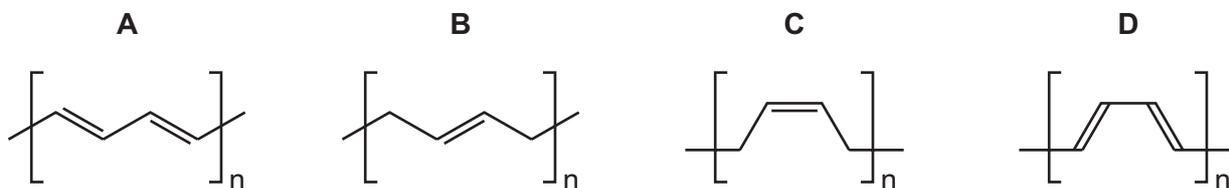


- 1 propanenitrile
- 2 ethanenitrile
- 3 propyl ethanoate
- 4 ethyl propanoate

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

- 39 The monomer buta-1,3-diene can undergo addition polymerisation in various ways. Two of the polymers that can be made are called *cis*-poly(buta-1,3-diene) and *trans*-poly(buta-1,3-diene). In these names *cis* and *trans* have their usual meanings.

What is the structure of the repeat unit of *cis*-poly(buta-1,3-diene)?



- 40 In the mass spectrum of a compound, Z, the relative abundances of the M and M+1 peaks are in the ratio 13 : 1.

What is compound Z?

- A butyl butanoate
- B hexan-3-one
- C 2,2,3-trimethylhexane
- D 3,3-dimethylpentan-1-ol



**Important values, constants and standards**

molar gas constant	$R = 8.31 \text{ J K}^{-1} \text{ mol}^{-1}$
Faraday constant	$F = 9.65 \times 10^4 \text{ C mol}^{-1}$
Avogadro constant	$L = 6.022 \times 10^{23} \text{ mol}^{-1}$
electronic charge	$e = -1.60 \times 10^{-19} \text{ C}$
molar volume of gas	$V_m = 22.4 \text{ dm}^3 \text{ mol}^{-1}$ at s.t.p. (101 kPa and 273 K) $V_m = 24.0 \text{ dm}^3 \text{ mol}^{-1}$ at room conditions
ionic product of water	$K_w = 1.00 \times 10^{-14} \text{ mol}^2 \text{ dm}^{-6}$ (at 298 K (25 °C))
specific heat capacity of water	$c = 4.18 \text{ kJ kg}^{-1} \text{ K}^{-1}$ (4.18 $\text{J g}^{-1} \text{ K}^{-1}$ )

The Periodic Table of Elements

		Group															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">1 H hydrogen 1.0</div> <div style="border: 1px solid black; padding: 2px;">2 He helium 4.0</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">3 Li lithium 6.9</div> <div style="border: 1px solid black; padding: 2px;">4 Be beryllium 9.0</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">11 Na sodium 23.0</div> <div style="border: 1px solid black; padding: 2px;">12 Mg magnesium 24.3</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">19 K potassium 39.1</div> <div style="border: 1px solid black; padding: 2px;">20 Ca calcium 40.1</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">37 Rb rubidium 85.5</div> <div style="border: 1px solid black; padding: 2px;">38 Sr strontium 87.6</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">55 Cs caesium 132.9</div> <div style="border: 1px solid black; padding: 2px;">56 Ba barium 137.3</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">87 Fr francium —</div> <div style="border: 1px solid black; padding: 2px;">88 Ra radium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">113 Nh nihonium —</div> <div style="border: 1px solid black; padding: 2px;">114 Fl flerovium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">115 Mc moscovium —</div> <div style="border: 1px solid black; padding: 2px;">116 Lv livermorium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">117 Ts tennessine —</div> <div style="border: 1px solid black; padding: 2px;">118 Og oganeson —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">119 Uue unbinilium —</div> <div style="border: 1px solid black; padding: 2px;">120 Uub unbinilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">121 Uut ununilium —</div> <div style="border: 1px solid black; padding: 2px;">122 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">123 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">124 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">125 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">126 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">127 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">128 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">129 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">130 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">131 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">132 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">133 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">134 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">135 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">136 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">137 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">138 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">139 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">140 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">141 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">142 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">143 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">144 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">145 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">146 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">147 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">148 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">149 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">150 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">151 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">152 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">153 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">154 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">155 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">156 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">157 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">158 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">159 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">160 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">161 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">162 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">163 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">164 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">165 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">166 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">167 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">168 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">169 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">170 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">171 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">172 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">173 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">174 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">175 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">176 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">177 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">178 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">179 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">180 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">181 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">182 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">183 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">184 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">185 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">186 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">187 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">188 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">189 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">190 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">191 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">192 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">193 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">194 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">195 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">196 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">197 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">198 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">199 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">200 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">201 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">202 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">203 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">204 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">205 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">206 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">207 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">208 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">209 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">210 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">211 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">212 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">213 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">214 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">215 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">216 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">217 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">218 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">219 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">220 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">221 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">222 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">223 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">224 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">225 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">226 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">227 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">228 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">229 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">230 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">231 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">232 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">233 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">234 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">235 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">236 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">237 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">238 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">239 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">240 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">241 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">242 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">243 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">244 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">245 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">246 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">247 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">248 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">249 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">250 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">251 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">252 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">253 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">254 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">255 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">256 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">257 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">258 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">259 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">260 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">261 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">262 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">263 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">264 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">265 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">266 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">267 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">268 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">269 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">270 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">271 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">272 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">273 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">274 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">275 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">276 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">277 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">278 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">279 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">280 Uuq ununilium —</div> </div>															
		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">281 Uuq ununilium —</div> <div style="border: 1px solid black; padding: 2px;">282 Uuq ununilium —</div> </div>															