Neap

Final Examination 2022

NSW Year 11 Chemistry

General Instructions

- Reading time – 5 minutes
- Working time – 2 hours
- Write using black pen
- Draw diagrams using pencil
- Calculators approved by NESA may be used
- A formulae sheet, data sheet and Periodic Table are provided at the back of this paper

Total Marks: 75

SECTION I – 15 marks (pages 2–4)

- Attempt Questions 1–15
- Allow about 30 minutes for this section

SECTION II – 60 marks (pages 5–20)

- Attempt Questions 16–28
- Allow about 1 hour and 30 minutes for this section

SECTION I

15 marks
Attempt Questions 1–15
Allow about 30 minutes for this section

Use the multiple-choice answer sheet for Questions 1–15.

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1 Which of the following techniques would be used to obtain sodium chloride from sea water?

A. distillation
B. evaporation
C. gravity filtration
D. vacuum filtration

2 The molecular formula of glucose is $C_6H_{12}O_6$.

What is the empirical formula of glucose?

A. CH_2O
B. $C_2H_4O_2$
C. $C_3H_6O_3$
D. $C_6H_{12}O_6$

3 Which of the following gases will occupy 22.71 L at 100 kPa and 0°C (273.15 K)?

A. 5.0 g of H_2
B. 20 g of O_2
C. 50 g of NO_2
D. 64 g of SO_2

4 What is the molar mass of $KAl(SO_4)_2 \times 12H_2O$?

A. 258.22 g mol^{-1}
B. 378.34 g mol^{-1}
C. 447.40 g mol^{-1}
D. 474.46 g mol^{-1}

5 Which of the following chemical equations is balanced?

A. $Fe(OH)_3(aq) + 2H_2SO_4(aq) \rightarrow Fe_2(SO_4)_3(aq) + 3H_2O(l)$
B. $Zn(s) + 2HCl(aq) \rightarrow ZnCl_2(aq) + H_2(g)$
C. $C_3H_7OH(l) + 5O_2(g) \rightarrow 3CO_2(g) + 4H_2O(g)$
D. $KNO_3(s) \rightarrow KNO_2(s) + O_2(g)$

6 How many chloride ions are in 0.100 mol of magnesium chloride?

A. 6.02×10^{22}

B. 1.20×10^{23}

C. 6.02×10^{23}

D. 1.20×10^{24}

7 Which row of the table correctly identifies a typical physical property of a metal element and a typical physical property of a non-metal element?

	Physical property of metal	*Physical property of non-metal*
A.	low boiling point	poor conductor of electricity
B.	low density	malleable
C.	high density	low melting point
D.	malleable	high density

8 Which of the following pairs of aqueous solutions will produce a precipitate when mixed?

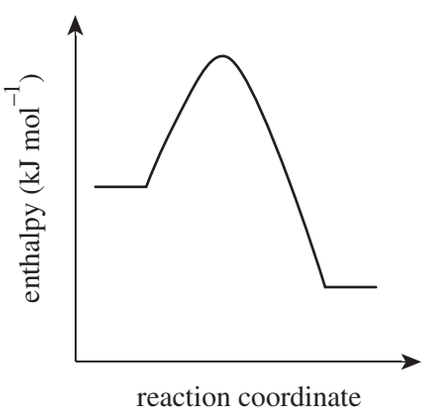
A. $BaCl_2$ and $Zn(NO_3)_2$

B. CH_3COOAg and $CaCl_2$

C. $MgSO_4$ and KBr

D. NaOH and HNO_3

9 An energy profile diagram for a reaction is shown.



Which of the following statements is correct?

A. The energy of the reactants is lower than the energy of the products.

B. The energy of the reactants is the same as the energy of the products.

C. The diagram represents the enthalpy change of an exothermic reaction.

D. The diagram represents the enthalpy change of an endothermic reaction.

10 Which of the following correctly lists the metals from most reactive to least reactive?

A. potassium, iron, nickel, silver

B. zinc, iron, copper, lead

C. potassium, magnesium, barium, aluminium

D. silver, copper, lead, sodium

11 Zinc metal reacts with sulfuric acid to produce zinc sulfate and hydrogen gas according to the following chemical equation.

$$Zn(s) + H_2SO_4(aq) \rightarrow ZnSO_4(aq) + H_2(g)$$

What type of reaction is this?

A. redox

B. precipitation

C. decomposition

D. combustion

12 A solution is prepared by dissolving 2.43 g of sodium hydroxide in enough water to make a 500 mL solution.

What is the concentration of hydroxide ions in the solution?

A. $0.0122 \text{ mol L}^{-1}$

B. $0.0608 \text{ mol L}^{-1}$

C. $0.1215 \text{ g mol}^{-1}$

D. $0.1215 \text{ mol L}^{-1}$

13 Which of the following synthesis reactions shows the formation of sodium hydroxide in its standard state?

A. $\text{Na}(l) + \text{O}_2(g) + \text{H}_2(g) \rightarrow \text{NaOH}(aq)$

B. $\text{Na}(s) + \frac{1}{2}\text{O}_2(g) + \frac{1}{2}\text{H}_2(g) \rightarrow \text{NaOH}(aq)$

C. $\text{Na}(s) + \text{O}_2(g) + \text{H}_2(g) \rightarrow 2\text{NaOH}(s)$

D. $\text{Na}(s) + \frac{1}{2}\text{O}_2(g) + \frac{1}{2}\text{H}_2(g) \rightarrow \text{NaOH}(s)$

14 Thorium-232 is a radioactive isotope that undergoes β-decay.

Which of the following equations shows the products of this reaction?

A. $^{230}_{90}\text{Th} \rightarrow {}^{226}_{88}\text{Ra} + {}^{4}_{2}\text{He}$

B. $^{232}_{90}\text{Th} \rightarrow {}^{232}_{89}\text{Ac} + {}^{0}_{1}\text{e}$

C. $^{232}_{90}\text{Th} \rightarrow {}^{232}_{91}\text{Pa} + {}^{0}_{-1}\text{e}$

D. $^{232}_{90}\text{Th} \rightarrow {}^{228}_{88}\text{Ra} + {}^{4}_{2}\text{He}$

15 Which of the following has the highest entropy?

A. ice at –15°C

B. ice at 0°C

C. water at 25°C

D. steam at 100°C

NSW Year 11 Chemistry

Section II Answer Booklet

Section II

60 marks

Attempt Questions 16–28

Allow about 1 hour and 30 minutes for this section

Instructions

- Answer the questions in the spaces provided. These spaces provide guidance for the expected length of response.
- Show all relevant working in questions involving calculations.
- Extra writing space is provided at the back of this booklet. If you use this space, clearly indicate which question you are answering.

Please turn over

Question 16 (4 marks)

Anhydrous sodium hydrogen carbonate ($NaHCO_3$) is used as a primary standard to make a standard solution. **4**

Describe a method that can be used to prepare a standard solution of $NaHCO_3$ in a school laboratory. In your answer, refer to the glassware and equipment required in each step.

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Question 17 (3 marks)

Butane (C_4H_{10}) is one of the components of liquefied petroleum gas (LPG). It undergoes complete combustion in excess oxygen. **3**

A sample of butane undergoes complete combustion in excess oxygen at 200°C and 1.8 atm, producing 35.0 L of carbon dioxide.

Calculate the mass of butane reacted. Include a balanced chemical equation in your answer.

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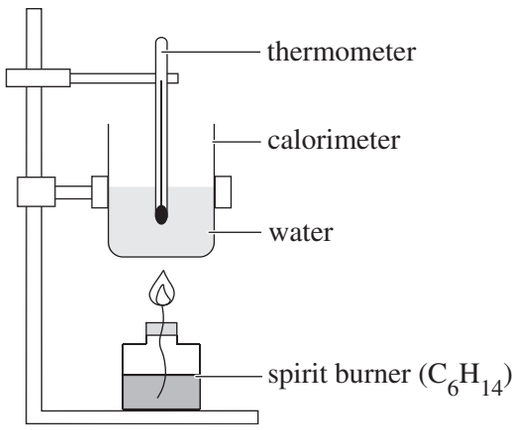
Question 18 (4 marks)

A student sets up the following experiment to determine the amount of energy that would be released by the combustion of a sample of hexane (C_6H_{14}). **4**



The following data was recorded at the start of the experiment.

Mass of hexane burned	2.38 g
Mass of water heated	600 mL
Initial temperature of water	23.0°C

If the heat of combustion of hexane is –4163 kJ mol^{-1}, calculate the final temperature of the water.

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Question 19 (4 marks)

(a) Write a balanced chemical equation for the reaction between aluminium and hydrochloric acid. **1**

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(b) Write a balanced chemical equation for the decomposition of hydrogen peroxide. **1**

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(c) Write a balanced chemical equation for the INCOMPLETE combustion of propane (C_3H_8) with a limited amount of oxygen. **1**

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(d) Write a balanced chemical equation for the reaction between the aqueous solutions of barium hydroxide and nitric acid. **1**

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Question 20 (5 marks)

13.00 g of hydrogen gas is reacted with 11.68 g of solid iodine to produce hydrogen iodine gas.

(a) Identify the limiting reagent and the excess reagent. **2**

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(b) Calculate the amount that the excess reagent is in excess. **1**

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(c) Calculate the mass of the hydrogen iodide gas produced. **2**

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Question 21 (3 marks)

Dichloromethane and water are liquids that are immiscible with each other. Some of their properties are shown in the table. **3**

	Boiling point (°C)	*Density (g mL^{-1})*
Dichloromethane	39.6	1.33
Water	100	1.00

A chemist finds a bottle containing dichloromethane and water and needs to determine whether she should use a separating funnel or distillation to separate the liquids.

Assess the effectiveness of the two techniques when separating dichloromethane and water.

Question 22 (4 marks)

Different isotopes of an element contain the same number of protons but have different atomic masses. **4**

Complete the table. Use spdf notation.

Isotope	*Number of protons*	*Number of neutrons*	*Electron configuration*
$^{13}_{6}C$			
$^{20}_{10}Ne$			
$^{24}_{11}Na$			
$^{81}_{35}Br$			

Question 23 (3 marks)

The table shows some information about the compounds dichloromethane (CH_2Cl_2), propane (C_3H_8), water (H_2O) and tetrafluoromethane (CF_4). **3**

Compound	*Molar mass (g mol^{-1})*	*Boiling point (°C)*	*Molar heat of vaporisation (kJ mol^{-1})*
CH_2Cl_2	84.9	39.60	28.60
C_3H_8	44.0	–42.00	15.70
H_2O	18.0	100.00	40.65
CF_4	88.8	–127.80	12.00

Explain why water has the highest boiling point and molar heat of vaporisation out of the four compounds despite having the smallest molar mass. Refer to the polarity of the compounds in your answer.

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Question 24 (7 marks)

A group of students were investigating the use of different metals and their solutions in galvanic cells. They were provided with strips of magnesium, lead and silver and solutions of magnesium nitrate, lead nitrate and silver nitrate. All the solutions had 1.0 mol L^{-1} concentration.

(a) Which combination of metals has the highest potential difference? **1**

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(b) Draw a diagram of a galvanic cell that uses the metals identified in part (a) and write a balanced chemical equation for the net ionic reaction that occurs in the cell. In your diagram, identify and label the electrodes, electrolytes and salt bridge, and label the electron flow. **5**

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(c) Calculate the cell potential of the galvanic cell. **1**

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Question 25 (8 marks)

In photosynthesis, plants use carbon dioxide and water to produce glucose and oxygen.

The table shows the standard enthalpies of formation of the reactants and products in photosynthesis.

Substance	$\Delta H°f\ (kJ\ mol^{-1})$	$S°\ (J\ mol^{-1}K^{-1})$
carbon dioxide (*g*)	–393.5	+213.8
glucose (*s*)	–1271	+209.2
oxygen (*g*)	0	+205.0
water (*l*)	–285.8	+70.00

(a) Using the information in the table, calculate the enthalpy change during the photosynthesis reaction. Include a balanced chemical equation in your answer. **3**

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(b) Calculate the amount of energy a plant would require to produce 65.0 g of glucose. **2**

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(c) Using the information in the table, determine whether the reaction is spontaneous at 25°C. **3**

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Question 26 (8 marks)

A catalyst can increase the rate of a chemical reaction. **8**

Identify FOUR other factors that can increase the rate of a reaction and explain, using collision theory, how these factors influence the rate of the reaction.

Question 27 (4 marks)

Potassium chloride is a water-soluble ionic salt. When 1.45 g of potassium chloride is dissolved in 50.0 mL of water, the temperature of the water decreases by 1.60°C.

(a) Name the process of separating positive and negative ions from a solid ionic salt in water. **1**

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(b) Calculate the molar enthalpy of the reaction. **3**

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Question 28 (3 marks)

A bottle of oven-cleaning solution contains sodium hydroxide. The volume of the bottle is 1.50 L and the concentration of sodium hydroxide in the solution is 2.65 mol L^{-1}.

(a) Calculate the mass of sodium hydroxide in the bottle. **2**

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(b) Some of the solution is used and the remaining volume of solution in the bottle is 0.50 L. Water is added to the bottle so that the volume of the solution returns to 1.50 L.

Calculate the molar concentration of sodium hydroxide in the dilute solution. **1**

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End of paper

Section II extra writing space

If you use this space, clearly indicate which question you are answering.

Section II extra writing space

If you use this space, clearly indicate which question you are answering.

FORMULAE SHEET

$$n = \frac{m}{MM} \qquad c = \frac{n}{V} \qquad PV = nRT$$

$$q = mc\Delta T \qquad \Delta G^\circ = \Delta H^\circ - T\Delta S^\circ \qquad \text{pH} = -\log_{10}\left[\text{H}^+\right]$$

$$pK_a = -\log_{10}\left[K_a\right] \qquad A = \varepsilon lc = \log_{10}\frac{I_o}{I}$$

Avogadro constant, N_A		6.022×10^{23} mol^{-1}
Volume of 1 mole ideal gas:	at 100 kPa and	
	at 0°C (273.15 K)	22.71 L
	at 25°C (298.15 K)	24.79 L
Gas constant		8.314 J mol^{-1} K^{-1}
Ionisation constant for water at 25°C (298.15 K), K_w		1.0×10^{-14}
Specific heat capacity of water		4.18×10^3 J kg^{-1} K^{-1}

DATA SHEET

Solubility constants at 25°C

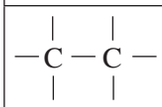
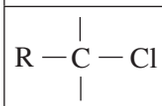
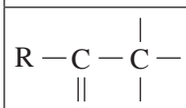
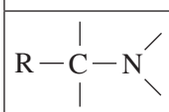
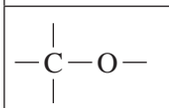
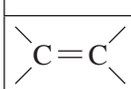
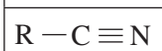
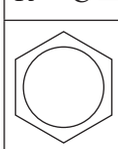
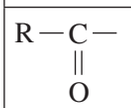
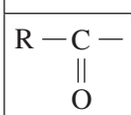
Compound	K_{sp}
Barium carbonate	2.58×10^{-9}
Barium hydroxide	2.55×10^{-4}
Barium phosphate	1.3×10^{-29}
Barium sulfate	1.08×10^{-10}
Calcium carbonate	3.36×10^{-9}
Calcium hydroxide	5.02×10^{-6}
Calcium phosphate	2.07×10^{-29}
Calcium sulfate	4.93×10^{-5}
Copper(II) carbonate	1.4×10^{-10}
Copper(II) hydroxide	2.2×10^{-20}
Copper(II) phosphate	1.40×10^{-37}
Iron(II) carbonate	3.13×10^{-11}
Iron(II) hydroxide	4.87×10^{-17}
Iron(III) hydroxide	2.79×10^{-39}
Iron(III) phosphate	9.91×10^{-16}

Compound	K_{sp}
Lead(II) bromide	6.60×10^{-6}
Lead(II) chloride	1.70×10^{-5}
Lead(II) iodide	9.8×10^{-9}
Lead(II) carbonate	7.40×10^{-14}
Lead(II) hydroxide	1.43×10^{-15}
Lead(II) phosphate	8.0×10^{-43}
Lead(II) sulfate	2.53×10^{-8}
Magnesium carbonate	6.82×10^{-6}
Magnesium hydroxide	5.61×10^{-12}
Magnesium phosphate	1.04×10^{-24}
Silver bromide	5.35×10^{-13}
Silver chloride	1.77×10^{-10}
Silver carbonate	8.46×10^{-12}
Silver hydroxide	2.0×10^{-8}
Silver iodide	8.52×10^{-17}
Silver phosphate	8.89×10^{-17}
Silver sulfate	1.20×10^{-5}

Infrared absorption data

Bond	Wavenumber/cm^{-1}
N—H (amines)	3300–3500
O—H (alcohols)	3230–3550 (broad)
C—H	2850–3300
O—H (acids)	2500–3000 (very broad)
C≡N	2220–2260
C=O	1680–1750
C=C	1620–1680
C—O	1000–1300
C—C	750–1100

^{13}C NMR chemical shift data

Type of carbon	δ/ppm
	5–40
	10–70
	20–50
	25–60
 alcohols, ethers or esters	50–90
	90–150
	110–125
	110–160
 esters or acids	160–185
 aldehydes or ketones	190–220

UV absorption

(This is not a definitive list and is approximate.)

Chromophore	λ_{max} (nm)
C—H	112
C—C	135
C=C	162

Chromophore	λ_{max} (nm)
C≡C	173 178 196 222
C—Cl	173
C—Br	208

Some standard potentials

$K^+ + e^-$	$\rightleftharpoons$	$K(s)$	–2.94 V
$Ba^{2+} + 2e^-$	$\rightleftharpoons$	$Ba(s)$	–2.91 V
$Ca^{2+} + 2e^-$	$\rightleftharpoons$	$Ca(s)$	–2.87 V
$Na^+ + e^-$	$\rightleftharpoons$	$Na(s)$	–2.71 V
$Mg^{2+} + 2e^-$	$\rightleftharpoons$	$Mg(s)$	–2.36 V
$Al^{3+} + 3e^-$	$\rightleftharpoons$	$Al(s)$	–1.68 V
$Mn^{2+} + 2e^-$	$\rightleftharpoons$	$Mn(s)$	–1.18 V
$H_2O + e^-$	$\rightleftharpoons$	$\frac{1}{2} H_2(g) + OH^-$	–0.83 V
$Zn^{2+} + 2e^-$	$\rightleftharpoons$	$Zn(s)$	–0.76 V
$Fe^{2+} + 2e^-$	$\rightleftharpoons$	$Fe(s)$	–0.44 V
$Ni^{2+} + 2e^-$	$\rightleftharpoons$	$Ni(s)$	–0.24 V
$Sn^{2+} + 2e^-$	$\rightleftharpoons$	$Sn(s)$	–0.14 V
$Pb^{2+} + 2e^-$	$\rightleftharpoons$	$Pb(s)$	–0.13 V
$H^+ + e^-$	$\rightleftharpoons$	$\frac{1}{2} H_2(g)$	0.00 V
$SO_4^{2-} + 4H^+ + 2e^-$	$\rightleftharpoons$	$SO_2(aq) + 2H_2O$	0.16 V
$Cu^{2+} + 2e^-$	$\rightleftharpoons$	$Cu(s)$	0.34 V
$\frac{1}{2} O_2(g) + H_2O + 2e^-$	$\rightleftharpoons$	$2OH^-$	0.40 V
$Cu^+ + e^-$	$\rightleftharpoons$	$Cu(s)$	0.52 V
$\frac{1}{2} I_2(s) + e^-$	$\rightleftharpoons$	I^-	0.54 V
$\frac{1}{2} I_2(aq) + e^-$	$\rightleftharpoons$	I^-	0.62 V
$Fe^{3+} + e$	$\rightleftharpoons$	Fe^{2+}	0.77 V
$Ag^+ + e^-$	$\rightleftharpoons$	$Ag(s)$	0.80 V
$\frac{1}{2} Br_2(l) + e^-$	$\rightleftharpoons$	Br^-	1.08 V
$\frac{1}{2} Br_2(aq) + e^-$	$\rightleftharpoons$	Br^-	1.10 V
$\frac{1}{2} O_2(g) + 2H^+ + 2e^-$	$\rightleftharpoons$	H_2O	1.23 V
$\frac{1}{2} Cl_2(g) + e^-$	$\rightleftharpoons$	Cl^-	1.36 V
$\frac{1}{2} Cr_2O_7^{2-} + 7H^+ + 3e^-$	$\rightleftharpoons$	$Cr^{3+} + \frac{7}{2} H_2O$	1.36 V
$\frac{1}{2} Cl_2(aq) + e^-$	$\rightleftharpoons$	Cl^-	1.40 V
$MnO_4^- + 8H^+ + 5e^-$	$\rightleftharpoons$	$Mn^{2+} + 4H_2O$	1.51 V
$\frac{1}{2} F_2(g) + e^-$	$\rightleftharpoons$	F^-	2.89 V

Aylward and Findlay, *SI Chemical Data (5th Edition)* is the principal source of data for the standard potentials. Some data may have been modified for examination purposes.

PERIODIC TABLE OF THE ELEMENTS

KEY

atomic number
symbol
standard atomic weight
name

79 Au 197.0 gold

1 H 1.008 hydrogen																	**2 He** 4.003 helium
3 Li 6.941 lithium	**4 Be** 9.012 beryllium											**5 B** 10.81 boron	**6 C** 12.01 carbon	**7 N** 14.01 nitrogen	**8 O** 16.00 oxygen	**9 F** 19.00 fluorine	**10 Ne** 20.18 neon
11 Na 22.99 sodium	**12 Mg** 24.31 magnesium											**13 Al** 26.98 aluminium	**14 Si** 28.09 silicon	**15 P** 30.97 phosphorus	**16 S** 32.07 sulfur	**17 Cl** 35.45 chlorine	**18 Ar** 39.95 argon
19 K 39.10 potassium	**20 Ca** 40.08 calcium	**21 Sc** 44.96 scandium	**22 Ti** 47.87 titanium	**23 V** 50.94 vanadium	**24 Cr** 52.00 chromium	**25 Mn** 54.94 manganese	**26 Fe** 55.85 iron	**27 Co** 58.93 cobalt	**28 Ni** 58.69 nickel	**29 Cu** 63.55 copper	**30 Zn** 65.38 zinc	**31 Ga** 69.72 gallium	**32 Ge** 72.64 germanium	**33 As** 74.92 arsenic	**34 Se** 78.96 selenium	**35 Br** 79.90 bromine	**36 Kr** 83.80 krypton
37 Rb 85.47 rubidium	**38 Sr** 87.61 strontium	**39 Y** 88.91 yttrium	**40 Zr** 91.22 zirconium	**41 Nb** 92.91 niobium	**42 Mo** 95.96 molybdenum	**43 Tc** technetium	**44 Ru** 101.1 ruthenium	**45 Rh** 102.9 rhodium	**46 Pd** 106.4 palladium	**47 Ag** 107.9 silver	**48 Cd** 112.4 cadmium	**49 In** 114.8 indium	**50 Sn** 118.7 tin	**51 Sb** 121.8 antimony	**52 Te** 127.6 tellurium	**53 I** 126.9 iodine	**54 Xe** 131.3 xenon
55 Cs 132.9 caesium	**56 Ba** 137.3 barium	**57–71** lanthanoids	**72 Hf** 178.5 hafnium	**73 Ta** 180.9 tantalum	**74 W** 183.9 tungsten	**75 Re** 186.2 rhenium	**76 Os** 190.2 osmium	**77 Ir** 192.2 iridium	**78 Pt** 195.1 platinum	**79 Au** 197.0 gold	**80 Hg** 200.6 mercury	**81 Tl** 204.4 thallium	**82 Pb** 207.2 lead	**83 Bi** 209.0 bismuth	**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

Lanthanoids

57 La 138.9 lanthanum	**58 Ce** 140.1 cerium	**59 Pr** 140.9 praseodymium	**60 Nd** 144.2 neodymium	**61 Pm** promethium	**62 Sm** 150.4 samarium	**63 Eu** 152.0 europium	**64 Gd** 157.3 gadolinium	**65 Tb** 158.9 terbium	**66 Dy** 162.5 dysprosium	**67 Ho** 164.9 holmium	**68 Er** 167.3 erbium	**69 Tm** 168.9 thulium	**70 Yb** 173.1 ytterbium	**71 Lu** 175.0 lutetium

Actinoids

89 Ac actinium	**90 Th** 232.0 thorium	**91 Pa** 231.0 protactinium	**92 U** 238.0 uranium	**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

Standard atomic weights are abridged to four significant figures.
Elements with no reported values in the table have no stable nuclides.
Information on elements with atomic numbers 113 and above is sourced from the International Union of Pure and Applied Chemistry Periodic Table of the Elements (November 2016 version).
The International Union of Pure and Applied Chemistry Periodic Table of the Elements (February 2010 version) is the principal source of all other data. Some data may have been modified.

Final Examination 2022

NSW Year 11 Chemistry

DIRECTIONS:

Write your name in the space provided.
Write your student number in the boxes provided below. Then, in the columns of digits below each box, fill in the oval which has the same number as you have written in the box. Fill in **one** oval only in each column.
Read each question and its suggested answers. Select the alternative A, B, C, or D that best answers the question. Fill in the response oval completely, using blue or black pen. Mark only **one oval** per question.

A ○ B ● C ○ D ○

If you think you have made a mistake, put a cross through the incorrect answer and fill in the new answer.

A ● B ⊗ C ○ D ○

If you change your mind and have crossed out what you consider to be the correct answer, then indicate this by writing the word *correct* and draw an arrow as follows.

correct ↓

A ⊗ B ⊗ C ○ D ○

STUDENT NAME: _____

STUDENT NUMBER:

1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9	9
0	0	0	0	0	0	0	0	0

SECTION I

MULTIPLE-CHOICE ANSWER SHEET

1.	A ○	B ○	C ○	D ○
2.	A ○	B ○	C ○	D ○
3.	A ○	B ○	C ○	D ○
4.	A ○	B ○	C ○	D ○
5.	A ○	B ○	C ○	D ○
6.	A ○	B ○	C ○	D ○
7.	A ○	B ○	C ○	D ○
8.	A ○	B ○	C ○	D ○
9.	A ○	B ○	C ○	D ○
10.	A ○	B ○	C ○	D ○
11.	A ○	B ○	C ○	D ○
12.	A ○	B ○	C ○	D ○
13.	A ○	B ○	C ○	D ○
14.	A ○	B ○	C ○	D ○
15.	A ○	B ○	C ○	D ○

STUDENTS SHOULD NOW CONTINUE WITH SECTION II