Section B M

NATIONAL QUALIFICATIONS 2014

CHEMISTRY INTERMEDIATE 1

MONDAY, 12 MAY 9.00 AM - 10.30 AM

X012/10/02

Full name of centre				Том	/n					
Forename(s)		Surname						Num	iber o	f seat
Date of birth Day Month	Year	Scott	ish can	didat	e num	ıber				
Necessary data will be found	in the Cher	mistry Data	a Bookle	et for	Interr	nedia	te 1 ar	nd Ac	cess (3.
Section A – Questions 1–20) (20 marks	s)								
Instructions for completion of Section A are given on page two.										
For this section of the examin	ation you n	nust use ar	n HB pe	encil						
Section B (40 marks)										
All questions should be attem	pted.									
The questions may be answ book, and must be written c	ered in any learly and	y order bu legibly in	t all an ink .	swer	s are	to be	writte	en in '	this a	nswer
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Additional space for answers supplementary sheets may I front cover of this booklet.	s will be fou be obtained	and at the difference of the d	end of Invigila	the l ator a	book. and sl	lf fur nould	ther s be in	pace sertec	is rec 1 insid	quired, de the
Before leaving the examination may lose all the marks for this	on room you s paper.	u must give	e this bo	ook t	o the I	Invigil	ator.	lf you	do no	ot, you
Use blue or black ink only										



Read carefully

- 1 Check that the answer sheet provided is for **Chemistry Intermediate 1 (Section A)**.
- 2 For this section of the examination you must use an **HB pencil**, and where necessary, an eraser.
- 3 Check that the answer sheet you have been given has **your name**, **date of birth**, **SCN** (Scottish Candidate Number) and **Centre Name** printed on it.

Do not change any of these details.

- 4 If any of this information is wrong, tell the Invigilator immediately.
- 5 If this information is correct, **print** your name and seat number in the boxes provided.
- 6 The answer to each question is **either** A, B, C or D. Decide what your answer is, then, using your pencil, put a horizontal line in the space provided (see sample question below).
- 7 There is **only one correct** answer to each question.
- 8 Any rough working should be done on the question paper or the rough working sheet, **not** on your answer sheet.
- 9 At the end of the examination, put the **answer sheet for Section A inside the front cover of this answer book**.

Sample Question

To show that the ink in a ball-pen consists of a mixture of dyes, the method of separation would be

- A chromatography
- B fractional distillation
- C fractional crystallisation
- D filtration.

The correct answer is **A**—chromatography. The answer **A** has been clearly marked in **pencil** with a horizontal line (see below).



Changing an answer

If you decide to change your answer, carefully erase your first answer and, using your pencil, fill in the answer you want. The answer below has been changed to D.



Page two

This section of the question paper consists of 20 multiple-choice questions.

- 1. Which of the following **always** occurs in a chemical reaction?
 - A A gas is given off.
 - B A solid is produced.
 - C There is a colour change.
 - D A new substance is formed.



Which of the following gases is produced when raw liver is added to hydrogen peroxide solution?

A Oxygen

- B Hydrogen
- C Nitrogen
- D Carbon dioxide

[Turn over



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Page three

3. A student investigated the reaction between zinc and dilute acid.



Which experiments show how changing acid concentration affects the rate of the reaction?

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



Page four

4. A student carried out 2 experiments to investigate the rate at which gas was given off when indigestion tablets were added to dilute hydrochloric acid.



Experiment 1

She used her results to draw curves on a graph.



Experiment 2 could have been carried out

- A at a lower temperature
- B using more concentrated hydrochloric acid
- C using half an indigestion tablet
- D using a crushed tablet.

[Turn over



5. An alcohol has the formula C₂H₅OH. Which of the following diagrams could represent a molecule of this alcohol?



- **6.** What is the name of the compound with the formula PCl_3 ?
 - A Phosphorus dichloride
 - B Phosphorus trichloride
 - C Phosphorus tetrachloride
 - D Phosphorus monochloride
- 7. The pH of four solutions is shown. Which solution is most acidic?

Solution	pH
А	2
В	6
С	8
D	11



Page six

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- 8. Which of the following substances is **not** a household acid?
 - А Lemonade
 - В Oven cleaner
 - С Soda water
 - D Vinegar

9. Which salt is produced when calcium carbonate is used to neutralise sulphuric acid?

- Calcium nitrate А
- В Calcium chloride
- С Calcium sulphate
- D Calcium phosphate
- **10**. Which of the following would **not** produce electricity?



containing ions

[Turn over



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Page seven

- **11**. Which of the following lists contains only natural fibres?
 - A Nylon, polyester, cotton
 - B Silk, wool, terylene
 - C Cotton, wool, silk
 - D Nylon, terylene, polyester

12. Which of the following is a renewable source of energy?

- A Oil
- B Coal
- C Peat
- D Biogas
- **13**. Which of the following compounds is a hydrocarbon?
 - A C₃H₆
 - B C₃H₇OH
 - $C CO_2$
 - D H₂CO₃



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Page eight

14. The following diagram shows the fractions obtained by distillation of crude oil in an oil refinery.



Compared with heavy gas oil

- A kerosene has smaller molecules and is less viscous
- B kerosene has larger molecules and is less viscous
- C kerosene has smaller molecules and is more viscous
- D kerosene has larger molecules and is more viscous.

15. Which of the following reactions is an example of cracking?

- A Large hydrocarbon molecule smaller hydrocarbon molecules
- B Hydrocarbon molecule \rightarrow carbon dioxide and water molecules
- C Ethanol molecule carbon dioxide and water molecules
- D Glucose molecules \rightarrow starch molecule
- **16**. Animals obtain energy by the reaction of glucose with oxygen. What name is given to this process?
 - A Combustion
 - **B** Fermentation
 - C Photosynthesis
 - D Respiration

[Turn over



Page nine

17. Which of the following gases in the atmosphere will cause the greenhouse effect?

- A Carbon dioxide
- B Sulphur dioxide
- C Oxygen
- D Nitrogen

18. Plants such as clover have root nodules which can convert a gas from the air into

- A carbonates
- B chlorides
- C nitrates
- D sulphates.
- **19**. Approximately how long does it take the body to break down the alcohol in one pint of beer?
 - A ½ hour
 - B 1 hour
 - C 2 hours
 - D 4 hours
- 20. Which of the following substances absorbs light energy required for photosynthesis?
 - A Carbon dioxide
 - B Water
 - C Chlorophyll
 - D Glucose

Candidates are reminded that the answer sheet MUST be returned INSIDE this answer book.



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Page ten

		SECTION B	Marks	WRITE IN THIS MARGIN
	4	40 marks are available in this section of the paper.	11101110	
	Al	l answers must be written clearly and legibly in ink.		
1.	Ant poly	imony, atomic number 51, is used in the manufacture of vethylene terephthalate (PET).		
	(<i>a</i>)	Write the symbol for antimony.		
		(You may wish to use page 8 of the data booklet to help you.)		
			1	
	(<i>b</i>)	PET is a thermoplastic which is used to manufacture fizzy drinks bottles.		
		(i) What is meant by thermoplastic?	1	
		(ii) Bottles made from PET can be recycled.		
		USES OF RECYCLED PET BOTTLES		
		packaging fibres		
	dı	rinks bottles		
		What is the most common use for recycled PET bottles?		
			1	
			(3)	

Page eleven

DO NOT WRITE IN THIS MARGIN

Giants found in Antarctica

2.

Insects in Antarctica, such as sea spiders, are found to be much larger than insects found in warmer climates.



This is thought to be due to an increased oxygen concentration in cold water.

The table shows how the concentration of oxygen in water changes with temperature.

Water temperature in °C	5	10	15	20	25
Concentration of oxygen in micromoles per kilogram of water	300	275	250	225	200

- (*a*) Use the information above to:
 - (i) label and complete the scale on the horizontal axis;
 - (ii) draw a line graph of the results.

(Additional paper, if required, can be found on Page twenty-seven.)



Page twelve





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Page fourteen

[Turn over for Question 4 on Page sixteen

DO NOT WRITE ON THIS PAGE



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Page fifteen

- 787980PlatinumGoldMercuryPtAuHg110Image: Compared to the second t
- (a) What is the atomic number for darmstadtium?
- (b) Predict the properties of darmstadtium based on its position in the Periodic Table.

(You may wish to use page 8 of the data booklet to help you.)

Property	Yes or No
Conducts electricity	
Conducts heat	



29

Copper

Cu

47

Silver

Ag

30

Zinc Zn

48

Cadmium Cd

28

Nickel

Ni

46

Palladium

Pd

Ds



Page sixteen

1

1

DO NOT WRITE IN THIS

MARGIN

Marks



Page seventeen

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[X012/10/02]

Page eighteen



[X012/10/02]

Page nineteen



Page twenty







Page twenty-two



Page twenty-three

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Page twenty-four

DO NOT WRITE IN THIS Marks MARGIN The label from an energy drink is shown. 12. Ingredients: carbonated water, sucrose, glucose, salt, citric acid, caffeine, artificial flavours, colours Nutritional Information Calories **Recommended Daily** per Can Calorie Intake 200 2000 (a) A student wanted to show that the energy drink contained the sugar glucose. What colour change would be observed if the Benedict's test was used? 1 From _ to (b) From the list of ingredients, which substance could be called a drug? 1 (c) Using the nutritional information and the equation below, calculate the percentage of the recommended calorie intake supplied by one can of the energy drink. calories in one can percentage Х 100 of daily calories recommended daily calorie intake % 1 (3)

X 0 1 2 1 0 0 2 2 5 * Page twenty-five







Page twenty-seven

ADDITIONAL SPACE FOR ANSWERS

DO NOT WRITE IN THIS MARGIN



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Page twenty-eight

ADDITIONAL SPACE FOR ANSWERS

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[X012/10/02]

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 $Page \ twenty-nine$

ADDITIONAL SPACE FOR ANSWERS

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[X012/10/02]

Page thirty

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Page thirty-one

[X012/10/02]

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Section B Question 2 (a)

Section B Question 2 (c)

http://www.antarctica.gov.au/science/cool-science/2010/sea-spiders-provideinsights-into-antarctic-evolution http://www.acanthoweb.fr/en/content/antarctic-acanthomorphs-peculiarities



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