Cambridge International AS & A Level

Candidate name: Centre number: Candidate number:

Cambridge International AS & A Level

9701/11

Chemistry

Paper 11 Theory (Core)

October/November 2023

1 hour 15 minutes

INSTRUCTIONS

- Answer all questions.
- Use a black or dark blue pen.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do not use an eraser, correction fluid or correction tape.
- Do not write in any barcode.
- Calculators may be used.
- You may use a soft pencil for any diagrams, graphs or calculations.

INFORMATION

- The total mass of this paper is 100 g.
- The number of marks for each question is shown in brackets [ ] at the end of each question or part question.
- The Periodic Table is provided on page 16.

This document consists of 28 printed pages. Blank pages are indicated.

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1 Ethanol, C_2H_5OH, and propanone, CH_3COCH_3, are both miscible with water.

Ethanol is a primary alcohol and propanone is a ketone.

(a) (i) Complete the table.

	ethanol	propanone
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]

[redacted]

(ii) The mass spectrum of ethanol is shown.

[redacted]

(b) Propanone undergoes [redacted].

(c) Ethanol undergoes [redacted].

(d) Propanone undergoes [redacted].

(e) Ethanol undergoes [redacted].

(f) Propanone undergoes [redacted].

(g) Ethanol undergoes [redacted].

[redacted]

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---

2 (a) Which is a [redacted]?

A [redacted]
B [redacted]
C [redacted]
D [redacted]

[redacted]

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---

3 [redacted] $Cr_2O_7^{2-}$ [redacted] Cr^{3+} [redacted] SO_3^{2-} [redacted] SO_4^{2-} [redacted]

(a) [redacted]

(b) [redacted]

(c) [redacted]

(d) [redacted]

(e) [redacted]

[redacted]

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---

4 (a) [redacted]

(b) [redacted]

(c) [redacted]

(d) [redacted]

(e) [redacted]

(f) [redacted]

(g) [redacted]

(h) [redacted]

[redacted]

© UCLES 2023 [redacted]

---

5 [redacted]

(a) [redacted]

(b) [redacted]

(c) [redacted]

(d) [redacted]

(e) [redacted]

[redacted]

© UCLES 2023 [redacted]

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6 [redacted]

(a) [redacted]

(b) [redacted]

(c) [redacted]

(d) [redacted]

(e) [redacted]

[redacted]

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7 [redacted]

(a) [redacted]

(b) [redacted]

(c) [redacted]

(d) [redacted]

(e) [redacted]

[redacted]

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8 [redacted]

(a) [redacted]

(b) [redacted]

(c) [redacted]

(d) [redacted]

(e) [redacted]

[redacted]

© UCLES 2023 [redacted]

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9 [redacted]

(a) [redacted]

(b) [redacted]

(c) [redacted]

(d) [redacted]

(e) [redacted]

[redacted]

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10 [redacted]

(a) [redacted]

(b) [redacted]

(c) [redacted]

(d) [redacted]

(e) [redacted]

[redacted]

© UCLES 2023 [redacted]

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11 [redacted]

(a) [redacted]

(b) [redacted]

(c) [redacted]

(d) [redacted]

(e) [redacted]

[redacted]

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12 [redacted]

(a) [redacted]

(b) [redacted]

(c) [redacted]

(d) [redacted]

(e) [redacted]

[redacted]

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13 [redacted]

(a) [redacted]

(b) [redacted]

(c) [redacted]

(d) [redacted]

(e) [redacted]

[redacted]

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14 [redacted]

(a) [redacted]

(b) [redacted]

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[redacted]

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15 [redacted]

(a) [redacted]

(b) [redacted]

(c) [redacted]

(d) [redacted]

(e) [redacted]

[redacted]

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16 [redacted]

(a) [redacted]

(b) [redacted]

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17 [redacted]

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18 [redacted]

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19 [redacted]

(a) [redacted]

(b) [redacted]

(c) [redacted]

(d) [redacted]

(e) [redacted]

[redacted]

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20 [redacted]

(a) [redacted]

(b) [redacted]

(c) [redacted]

(d) [redacted]

(e) [redacted]

[redacted]

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21 [redacted]

(a) [redacted]

(b) [redacted]

(c) [redacted]

(d) [redacted]

(e) [redacted]

[redacted]

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22 [redacted]

(a) [redacted]

(b) [redacted]

(c) [redacted]

(d) [redacted]

(e) [redacted]

[redacted]

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23 [redacted]

(a) [redacted]

(b) [redacted]

(c) [redacted]

(d) [redacted]

(e) [redacted]

[redacted]

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24 [redacted]

(a) [redacted]

(b) [redacted]

(c) [redacted]

(d) [redacted]

(e) [redacted]

[redacted]

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25 [redacted]

(a) [redacted]

(b) [redacted]

(c) [redacted]

(d) [redacted]

(e) [redacted]

[redacted]

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26 [redacted]

(a) [redacted]

(b) [redacted]

(c) [redacted]

(d) [redacted]

(e) [redacted]

[redacted]

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27 [redacted]

(a) [redacted]

(b) [redacted]

(c) [redacted]

(d) [redacted]

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[redacted]

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28 [redacted]

(a) [redacted]

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[redacted]

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Table of the relative atomic masses

Lithium, Li	7	Iron, Fe	56
Beryllium, Be	9	Copper, Cu	63.5
Boron, B	11	Zinc, Zn	65
Carbon, C	12	Bromine, Br	80
Nitrogen, N	14	Silver, Ag	108
Oxygen, O	16	Iodine, I	127
Fluorine, F	19	Barium, Ba	137
Sodium, Na	23	Lead, Pb	207
Magnesium, Mg	24	Uranium, U	238
Aluminium, Al	27		
Phosphorus, P	31		
Sulfur, S	32		
Chlorine, Cl	35.5		
Potassium, K	39		
Calcium, Ca	40		
Chromium, Cr	52		
Manganese, Mn	55		

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Table of the elements