

Chemistry
UNIT: 4CH1
PAPER: 2C

Monday 20 November 2023 – Morning

Diagram Booklet

In the boxes below, write your name, centre number and candidate number.

Surname					
Other names					
Centre Number					
Candidate Number					

INSTRUCTIONS

There may be spare copies of some diagrams in case you need them.

THIS DIAGRAM BOOKLET MUST BE RETURNED WITH THE QUESTION PAPER AT THE END OF THE EXAMINATION.

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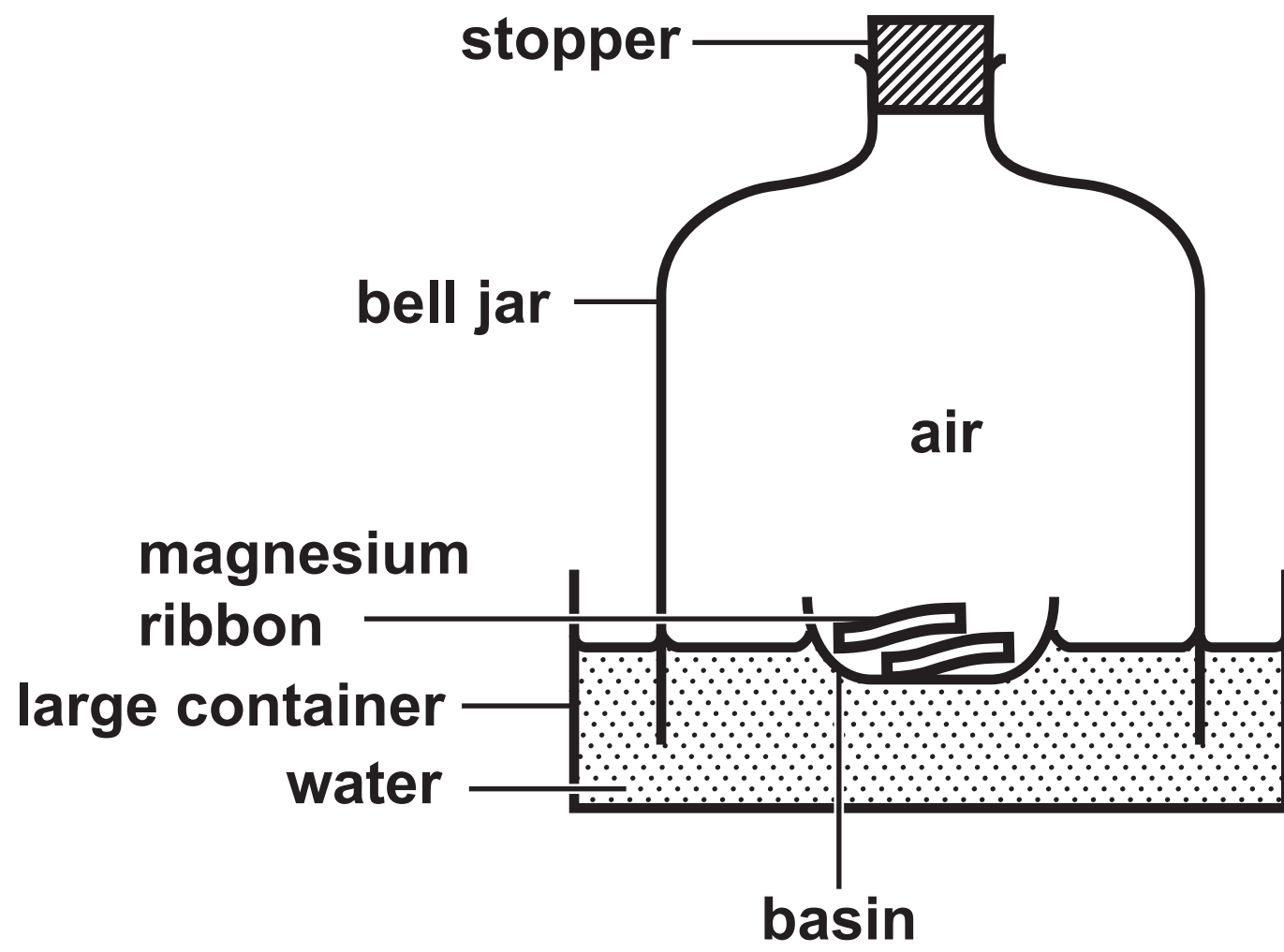
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Question 1(d)

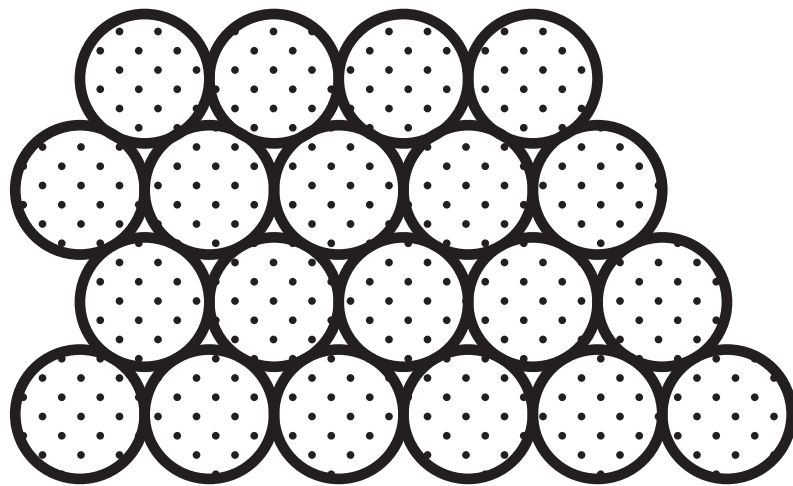
Halogen added	Chloride ion in solution	Bromide ion in solution	Iodide ion in solution
chlorine		reaction	reaction
bromine	no reaction		reaction
iodine	no reaction	no reaction	

Question 2

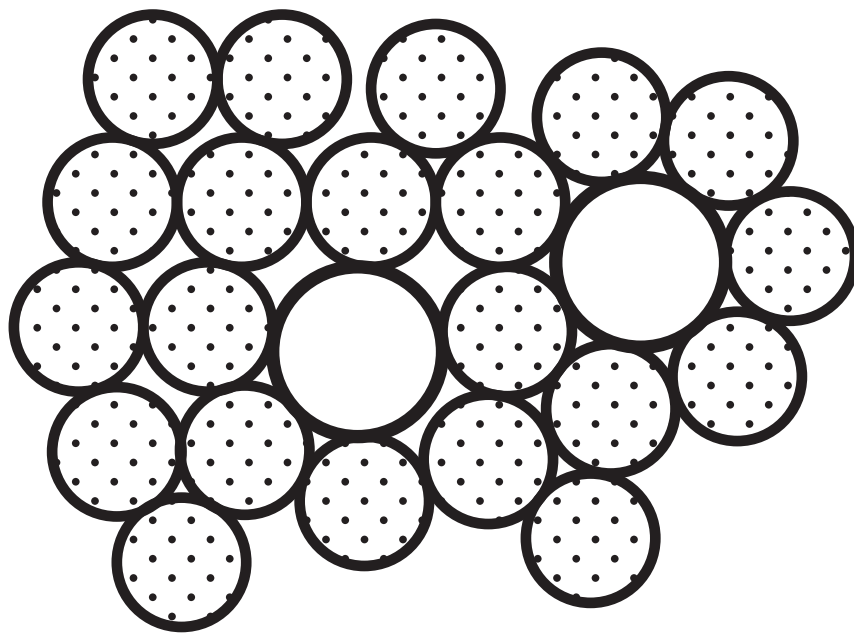


Question 3(c)

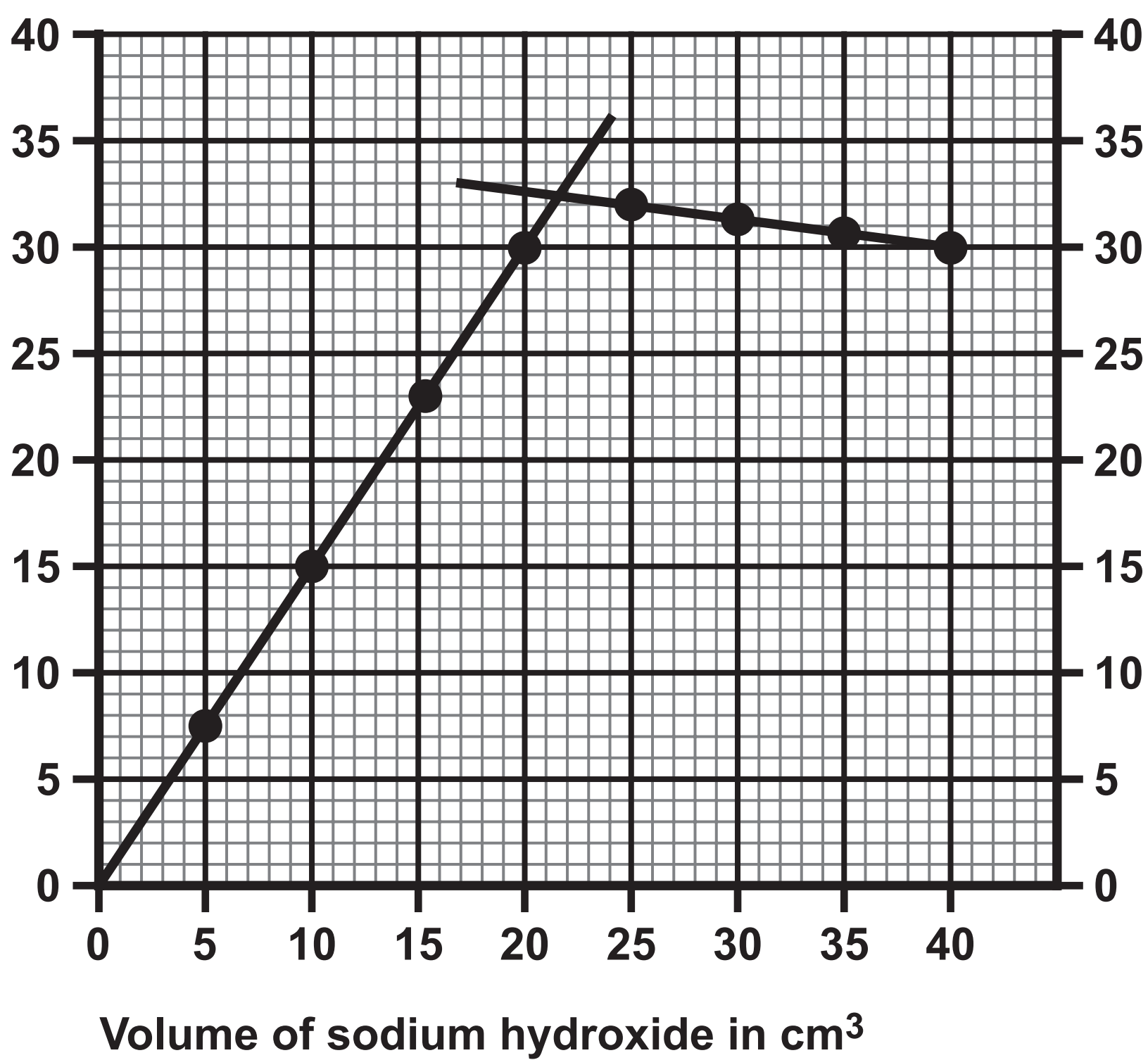
Pure aluminium



Alloy of aluminium



Question 4(c)

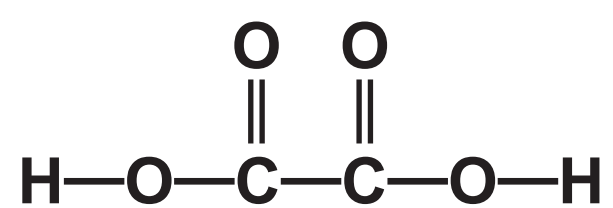
Temperature change in $^{\circ}\text{C}$ 

Question 4(d)

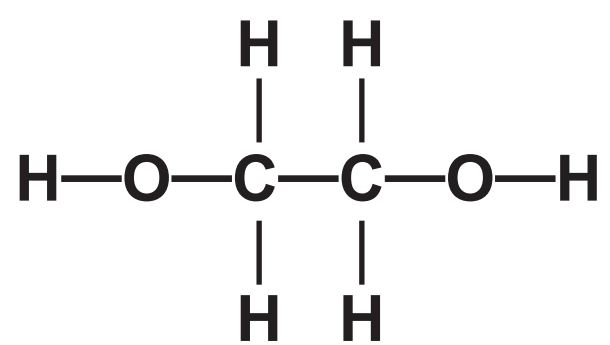
Maximum temperature change	35 °C
Volume of hydrochloric acid	25 cm ³
Volume of sodium hydroxide solution added for complete reaction	22 cm ³

Question 5(c)

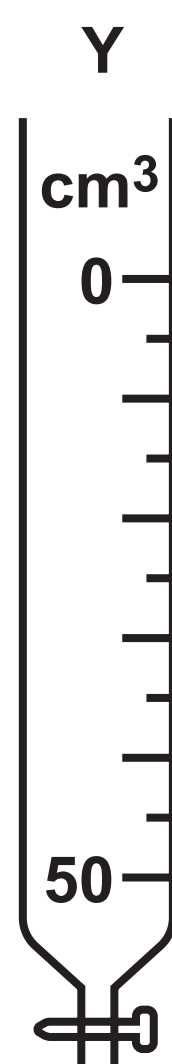
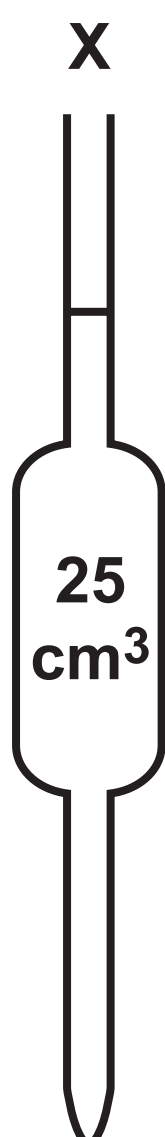
ethanedioic acid



ethanediol



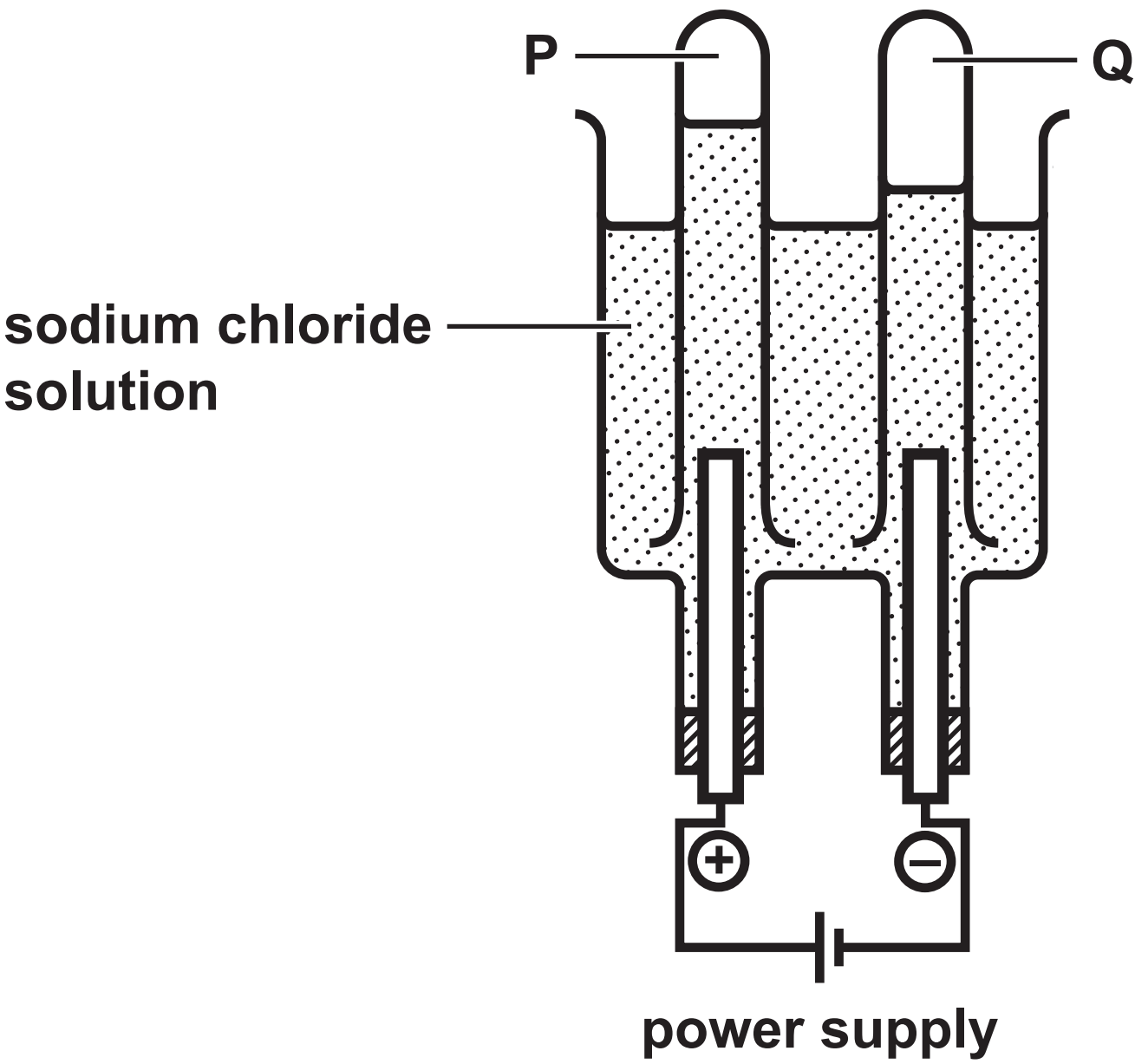
Question 6(a)



Question 6(c)

Concentration of nitric acid in mol/dm³	0.350
Concentration of sodium carbonate solution in mol/dm³	0.220
Volume of sodium carbonate solution in cm³	25.0

Question 7(b) and (c)



Question 7(d)(i)

Bond	H—H	O=O	O—H
Bond energy in kJ/mol	436	498	463

Question 7(d)(ii)

Bond	H—H	O=O	O—H
Bond energy in kJ/mol	436	498	463

