

Combined Science
PAPER 2
Foundation Tier

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.**

Contents

Page

4	Question 1(b)
5	Question 2(b)
6	Question 3(d)
7	Question 3(d)(i)
8	Question 3(d)(i) (Spare copy)
9	Question 4(a)
10	Question 4(b)
11	Question 5(b)
12	Question 5(c)(ii)
13	Question 6(c)
14	Question 6(d)

Question 1(b)

Figure 1

Pure drinking water

Mass of dissolved solids in mg per 1000cm³

calcium ions	60
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sodium ions **2**

hydrogencarbonate ions 200

pH of water

pH 7

Question 2(b)

Figure 2

metal	observation
silver	no change is seen
iron	very slow bubbling
magnesium	steady bubbling

Question 3(d)

Figure 3

key to molecules

H

H

= hydrogen

N

N

= nitrogen

H

N

H

= ammonia

before reaction	at equilibrium
<div><div><div><div>H</div><div>H</div></div><div><div>H</div><div>H</div></div><div><div>H</div><div>H</div></div><div><div>H</div><div>H</div></div><div><div>H</div><div>H</div></div><div><div>H</div><div>H</div></div><div><div>H</div><div>H</div></div><div><div>H</div><div>H</div></div><div><div>H</div><div>H</div></div><div><div>H</div><div>H</div></div></div><div><div><div>N</div><div>N</div></div><div><div>N</div><div>N</div></div><div><div>N</div><div>N</div></div><div><div>N</div><div>N</div></div></div></div>	<div><div><div><div>H</div><div>N</div><div>H</div></div><div><div>H</div><div>N</div><div>H</div></div><div><div>H</div><div>H</div></div><div><div>H</div><div>H</div></div><div><div>H</div><div>N</div><div>H</div></div><div><div>H</div><div>N</div><div>H</div></div><div><div>H</div><div>H</div></div><div><div>H</div><div>H</div></div><div><div>H</div><div>H</div></div><div><div>H</div><div>H</div></div></div><div><div><div><div>H</div><div>N</div><div>H</div></div><div><div>H</div><div>N</div><div>H</div></div><div><div>H</div><div>N</div><div>H</div></div><div><div>H</div><div>N</div><div>H</div></div><div><div>N</div><div>N</div></div><div><div>N</div><div>N</div></div><div><div>N</div><div>N</div></div><div><div>N</div><div>N</div></div></div></div></div>

Question 3(d)(i)

	number of molecules before reaction	number of molecules at equilibrium	change in number of molecules
nitrogen	4	2	-2
hydrogen	_____	_____	_____
ammonia	0	4	+4

Question 3(d)(i)

	number of molecules before reaction	number of molecules at equilibrium	change in number of molecules
nitrogen	4	2	-2
hydrogen	_____	_____	_____
ammonia	0	4	+4

Question 4(a)

step 1 use a measuring cylinder to measure out 100 cm^3 of dilute hydrochloric acid

step 2 pour the acid into a beaker

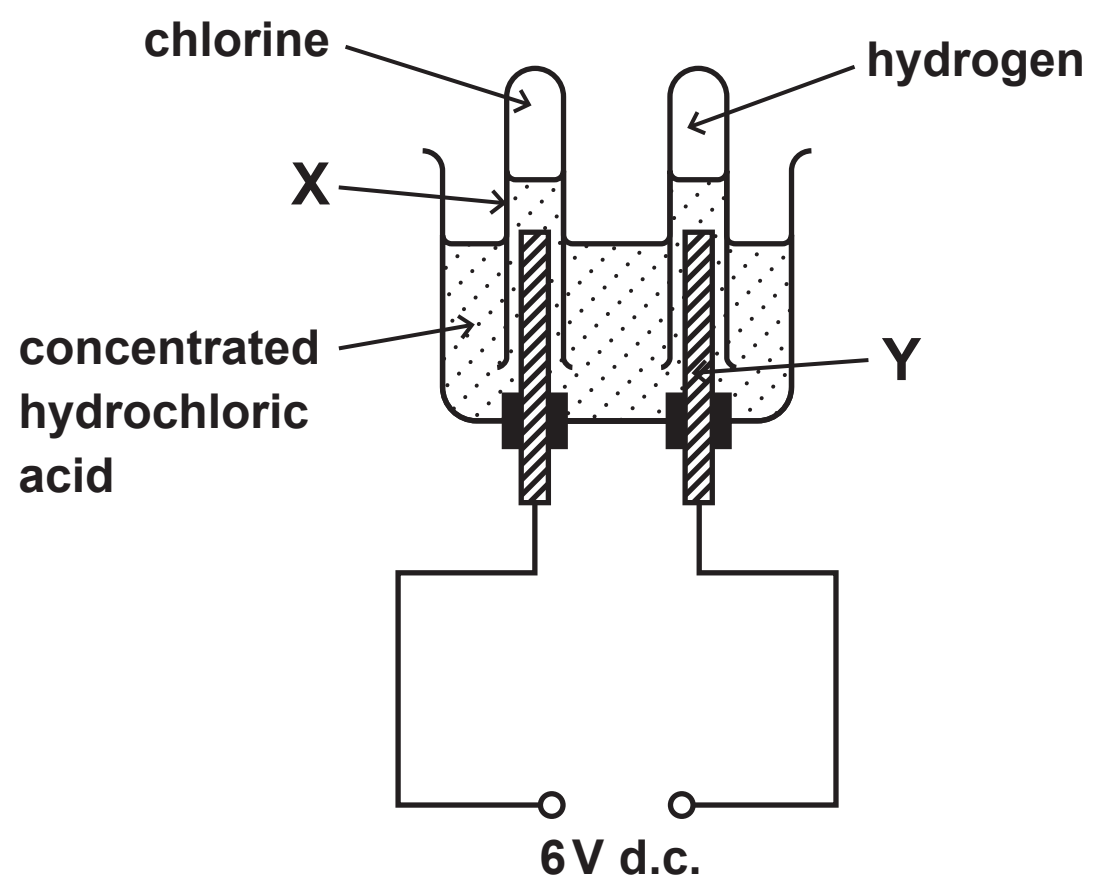
step 3 measure the pH with a pH probe

step 4 add half a spatula of solid **B** and stir

step 5 repeat steps 3 and 4 until the pH stops changing.

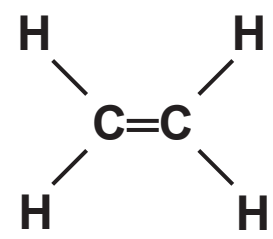
Question 4(b)

Figure 4



Question 5(b)

Figure 5



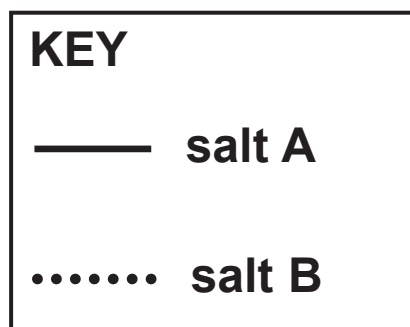
Question 5(c)(ii)

Figure 6

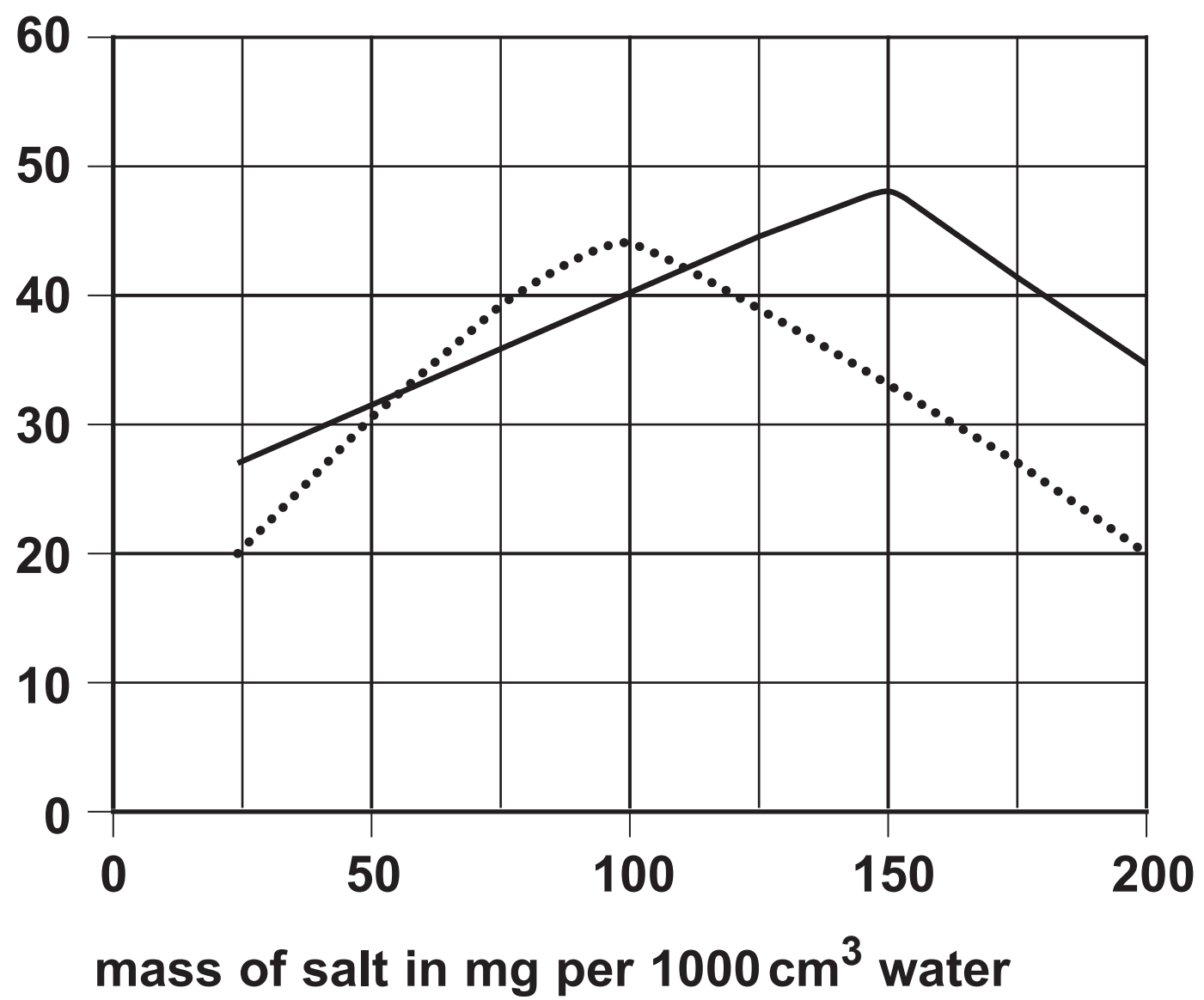
 H^+ H^- Cl^+ Cl^-

Question 6(c)

Figure 7



percentage
of impurities
removed



Question 6(d)

Figure 8

