

**Paper Reference(s) 9CH0/01  
Pearson Edexcel Level 3 GCE**

**Chemistry**

**Advanced**

**PAPER 1: Advanced Inorganic and Physical  
Chemistry**

**Diagram Booklet**

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

<b>Surname</b>					
<b>Other names</b>					
<b>Centre Number</b>					
<b>Candidate Number</b>					

## **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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Question 1(a)

<b>Particle</b>	<b>Relative charge</b>	<b>Relative mass</b>
<b>proton</b>	<b>+1</b>	<b>1</b>
<b>neutron</b>		
<b>electron</b>		

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**Question 1(a)**

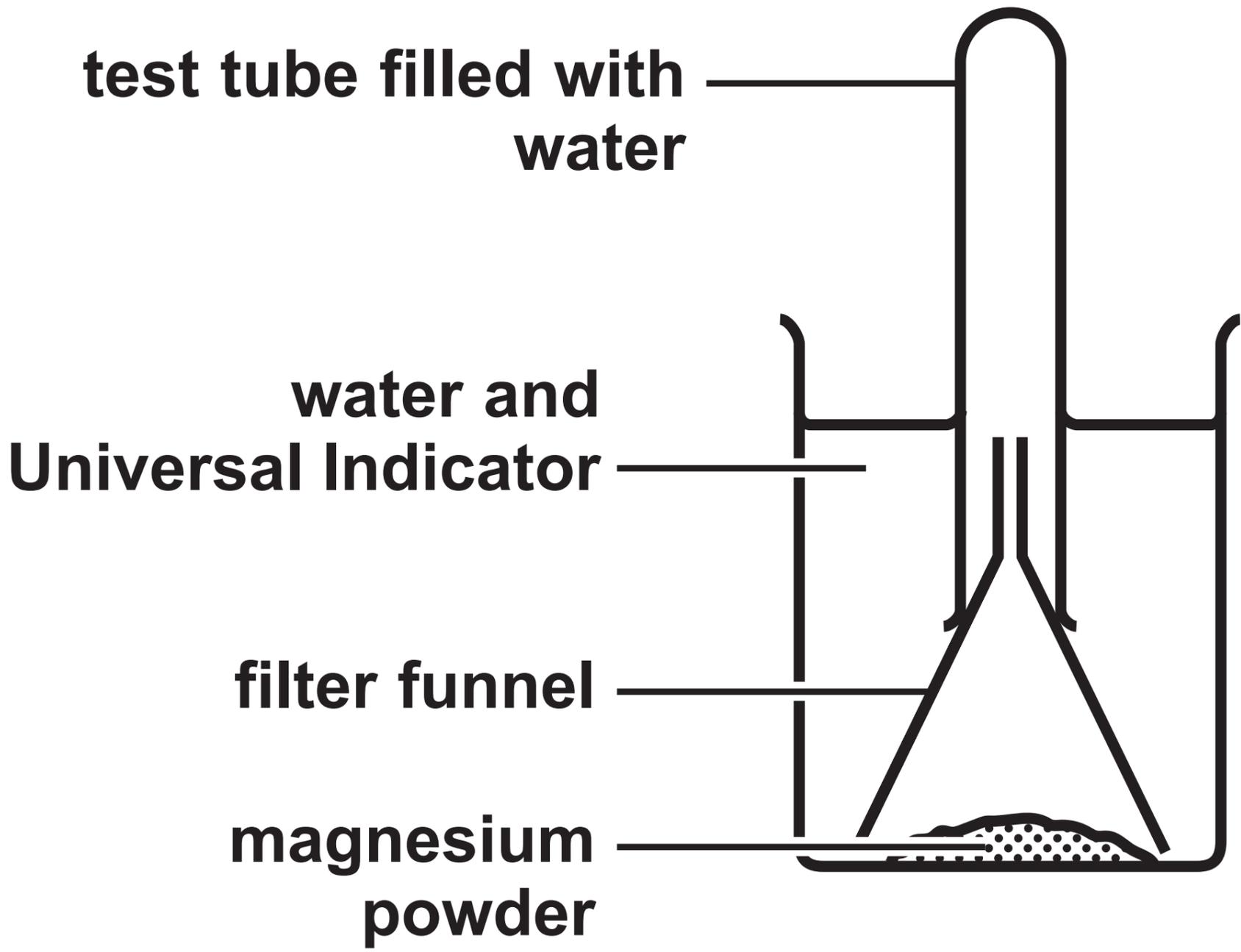
<b>Particle</b>	<b>Relative charge</b>	<b>Relative mass</b>
<b>proton</b>	<b>+1</b>	<b>1</b>
<b>neutron</b>		
<b>electron</b>		

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**Question 1(d)**

<b>Element</b>	<b>silicon</b>	<b>chlorine</b>
<b>Melting temperature / K</b>	<b>1683</b>	<b>172</b>

Question 2(a)



## Question 3(d)



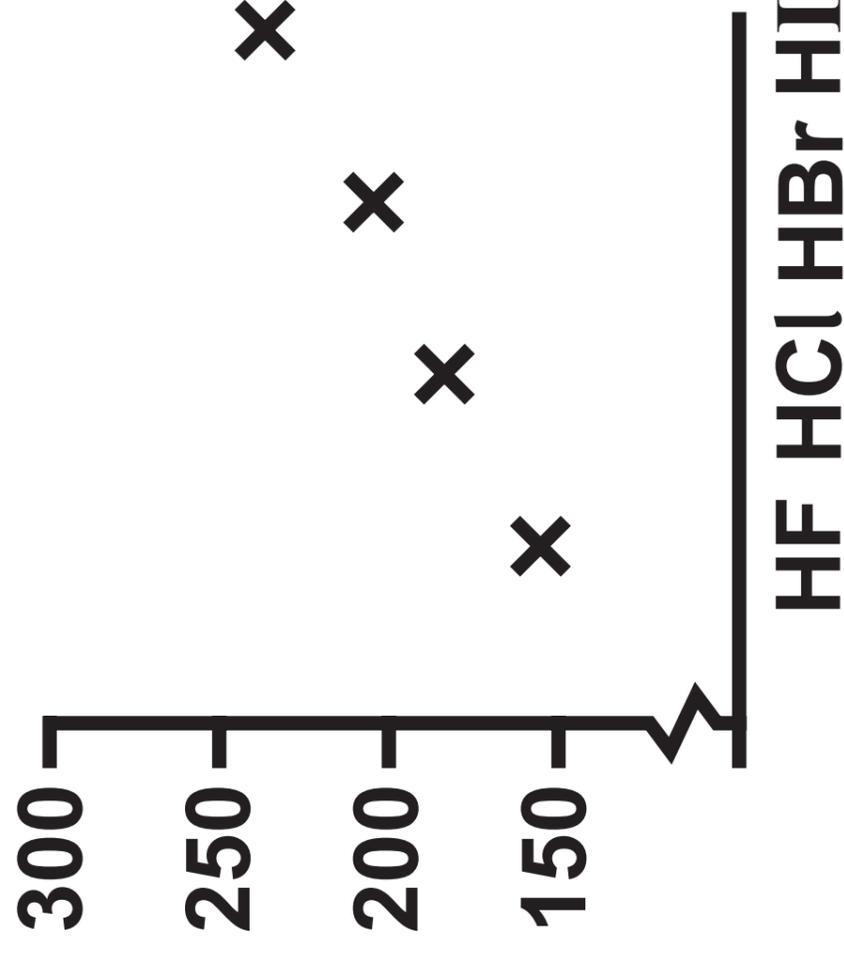
$$E^\ominus = +1.57 \text{ V}$$

## Question 3(e)(i)

Diagram A

Boiling temperature

/ K

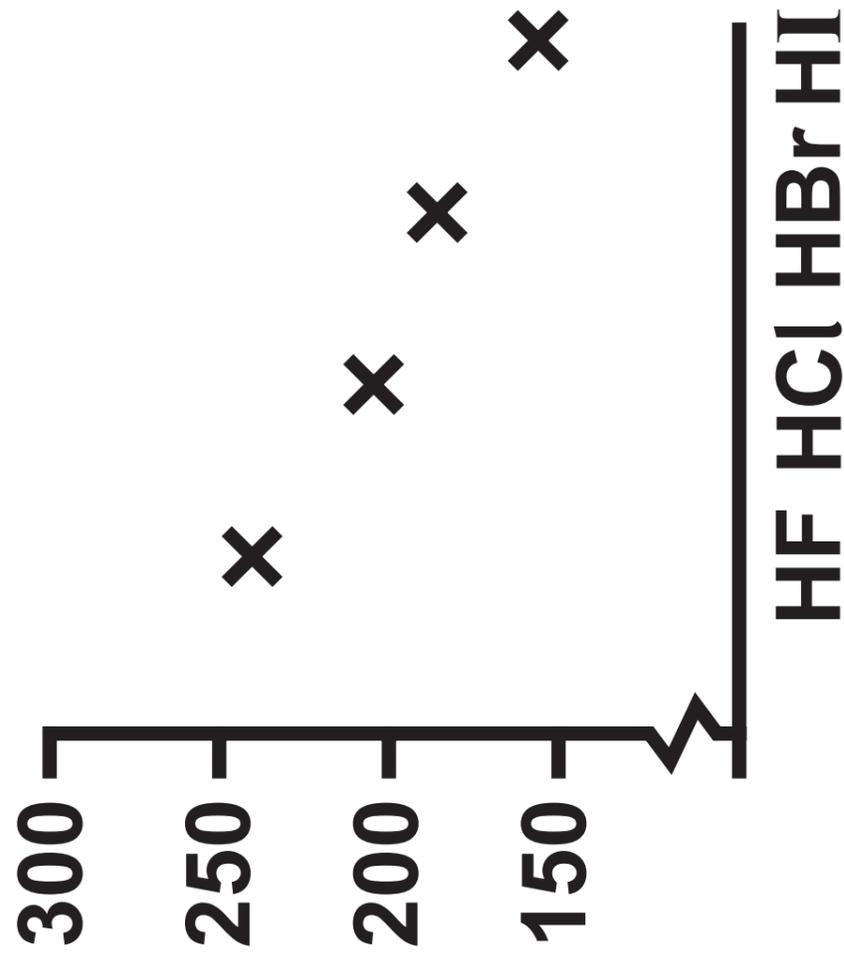


Hydrogen halide

Diagram B

Boiling temperature

/ K



Hydrogen halide

(continued on the next page)

Turn over

## Question 3(e)(i) continued.

Diagram C

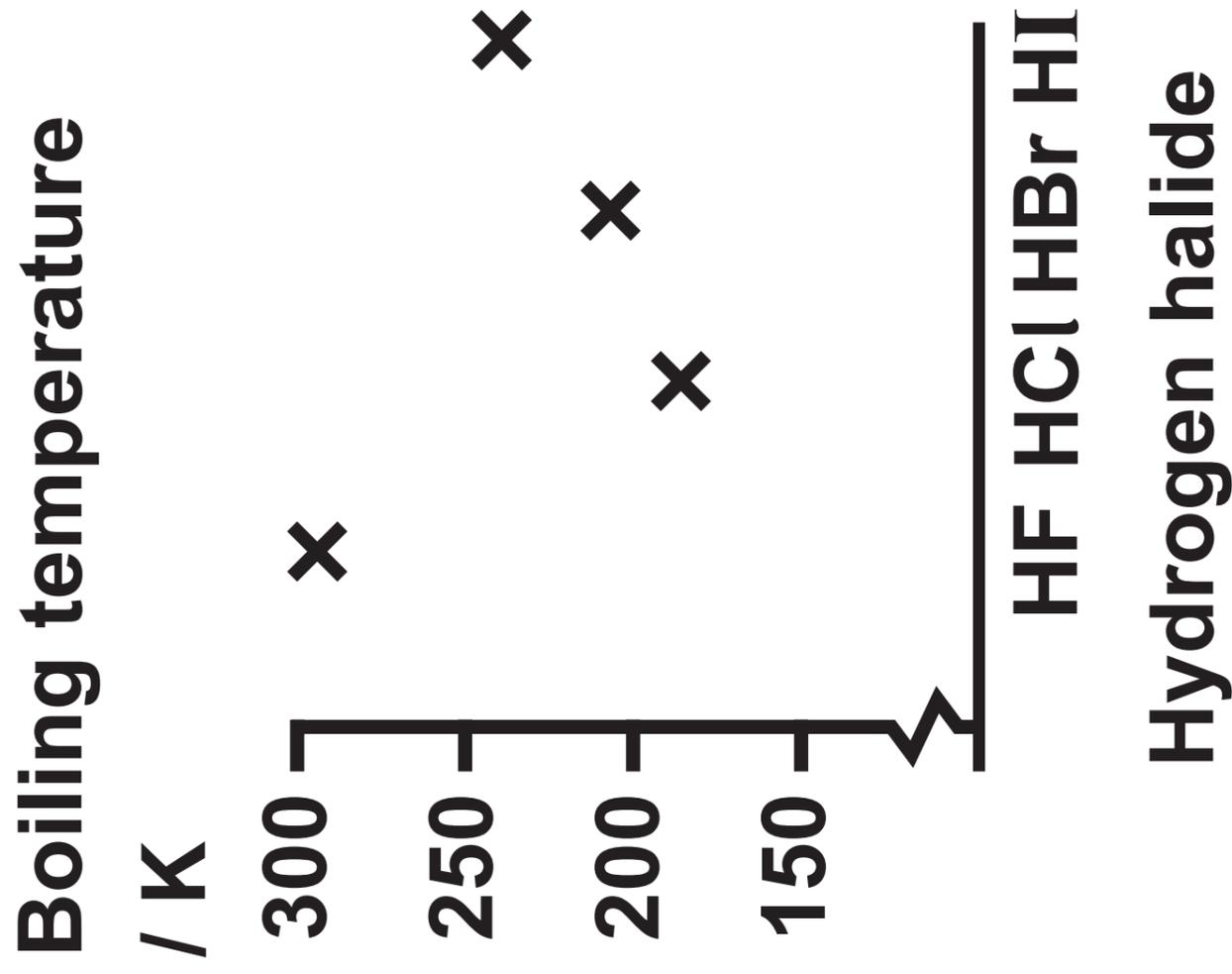
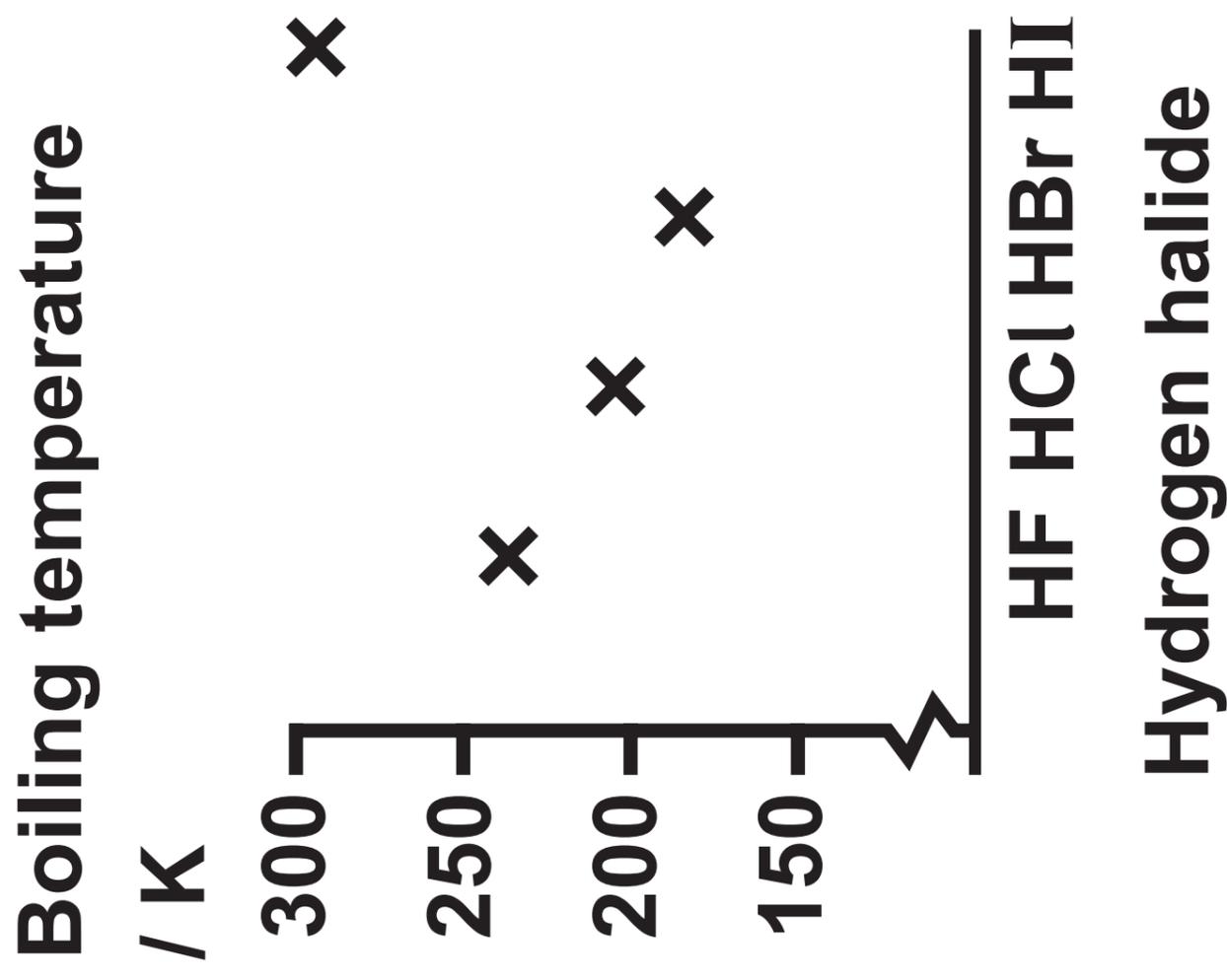
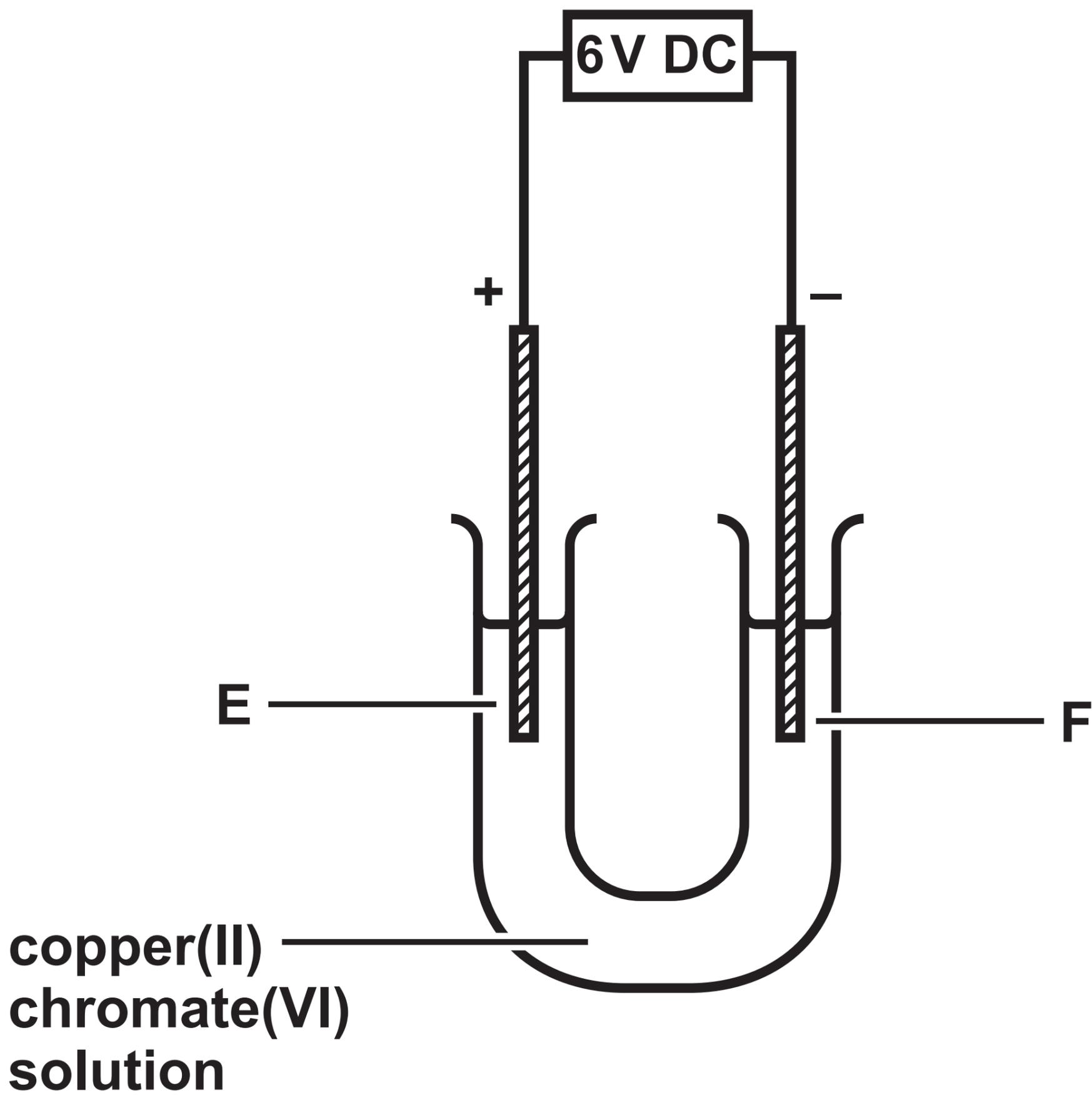


Diagram D



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Question 4(b)



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**Question 4(d)**

<b>Substance</b>	<b>Name</b>
<b>P</b>	<b>copper</b>
<b>Q</b>	<b>iodine</b>
<b>R</b>	<b>silicon(IV) oxide</b>
<b>S</b>	<b>sodium chloride</b>

## Question 5(c)(ii)

<b>Enthalpy change</b>	<b>Value / kJ mol<sup>-1</sup></b>
<b>Enthalpy change of hydration of K<sup>+</sup></b>	<b>-322</b>
<b>Enthalpy change of hydration of Ca<sup>2+</sup></b>	<b>-1650</b>
<b>Enthalpy change of solution of KCl</b>	<b>+17.2</b>
<b>Lattice energy of KCl</b>	<b>-711</b>

## Question 5(c)(ii)



## Question 5(c)(ii)



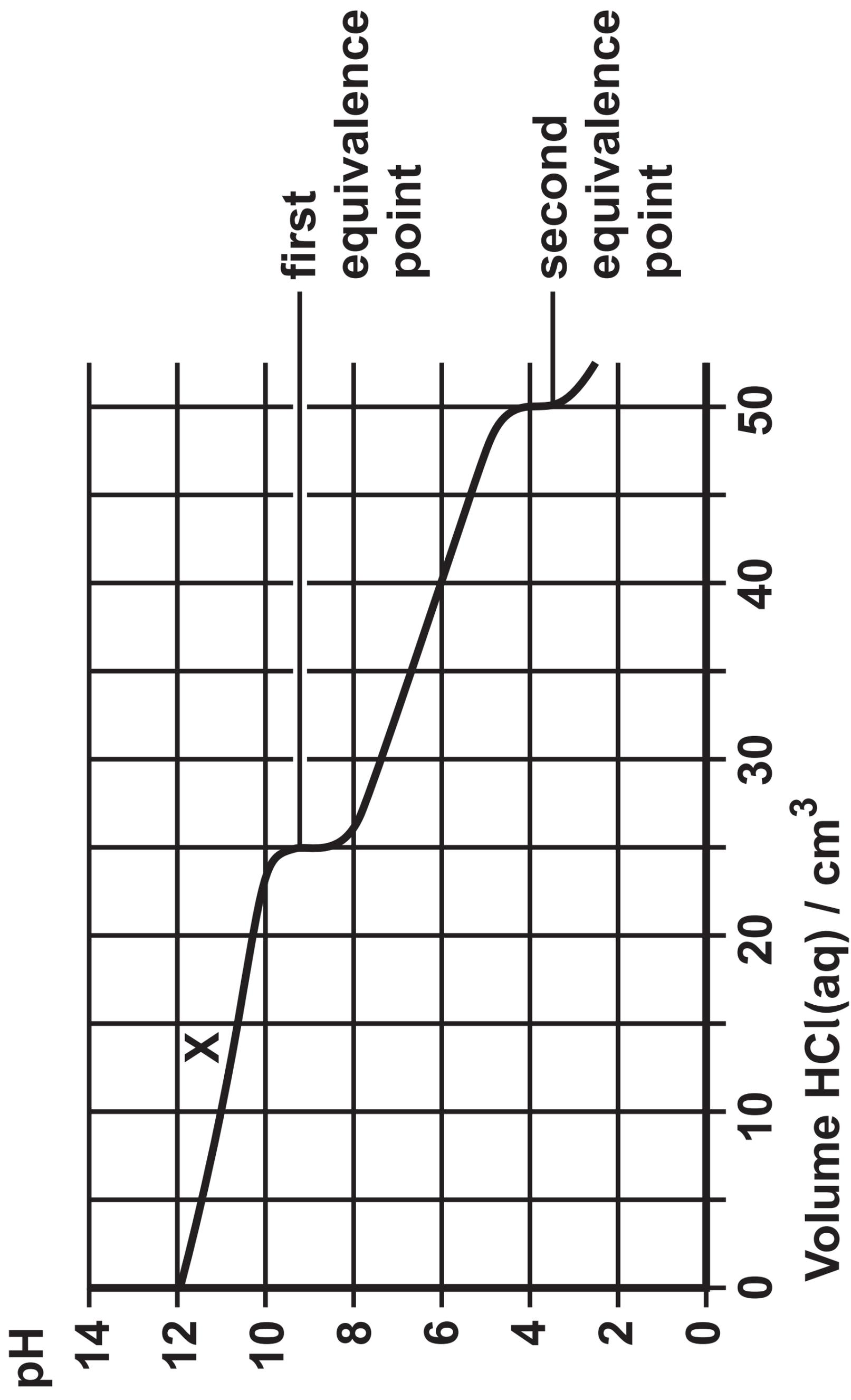
## Question 6(d)

	Acid and base forming the salt in solution J	Acid and base forming the salt in solution K
<input type="checkbox"/> A	HCl(aq) and NH <sub>3</sub> (aq)	CH <sub>3</sub> COOH(aq) and NaOH(aq)
<input type="checkbox"/> B	HCl(aq) and NaOH(aq)	CH <sub>3</sub> COOH(aq) and NH <sub>3</sub> (aq)
<input type="checkbox"/> C	CH <sub>3</sub> COOH(aq) and NaOH(aq)	HCl(aq) and NaOH(aq)
<input type="checkbox"/> D	CH <sub>3</sub> COOH(aq) and NH <sub>3</sub> (aq)	HCl(aq) and NH <sub>3</sub> (aq)





## Question 6(f)



## Question 7(c)

Right-hand electrode system	$E^\ominus$ / V
$\text{Zn}^{2+}(\text{aq}) + 2\text{e}^- \rightleftharpoons \text{Zn}(\text{s})$	-0.76
$\text{Cr}^{3+}(\text{aq}) + \text{e}^- \rightleftharpoons \text{Cr}^{2+}(\text{aq})$	-0.41
$\text{Cr}_2\text{O}_7^{2-}(\text{aq}) + 14\text{H}^+(\text{aq}) + 6\text{e}^- \rightleftharpoons 2\text{Cr}^{3+}(\text{aq}) + 7\text{H}_2\text{O}(\text{l})$	+1.33