

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

Chemistry  
Advanced  
PAPER 1: Advanced Inorganic and Physical Chemistry

Monday 12 June 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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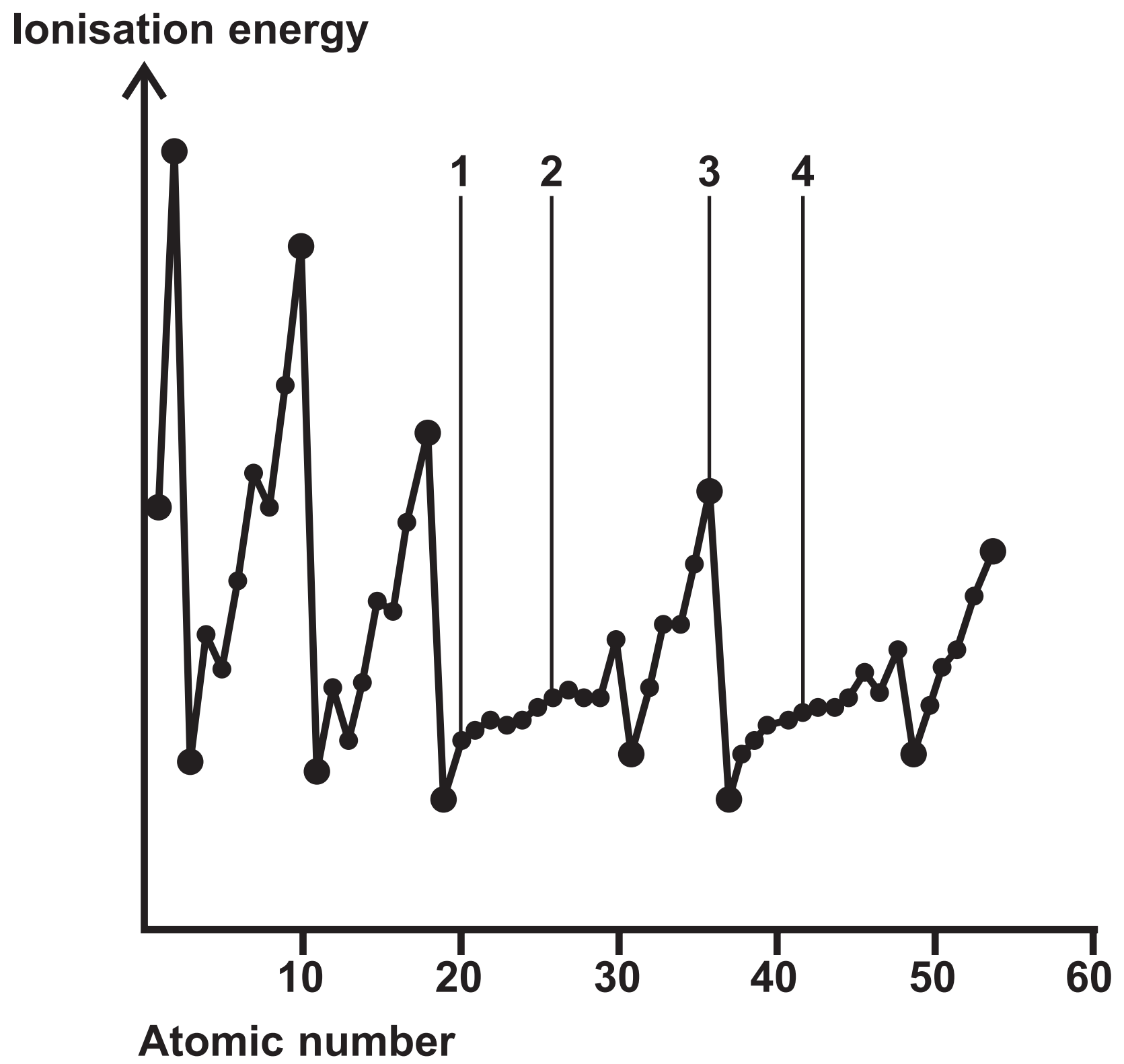
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## Question 1(a)



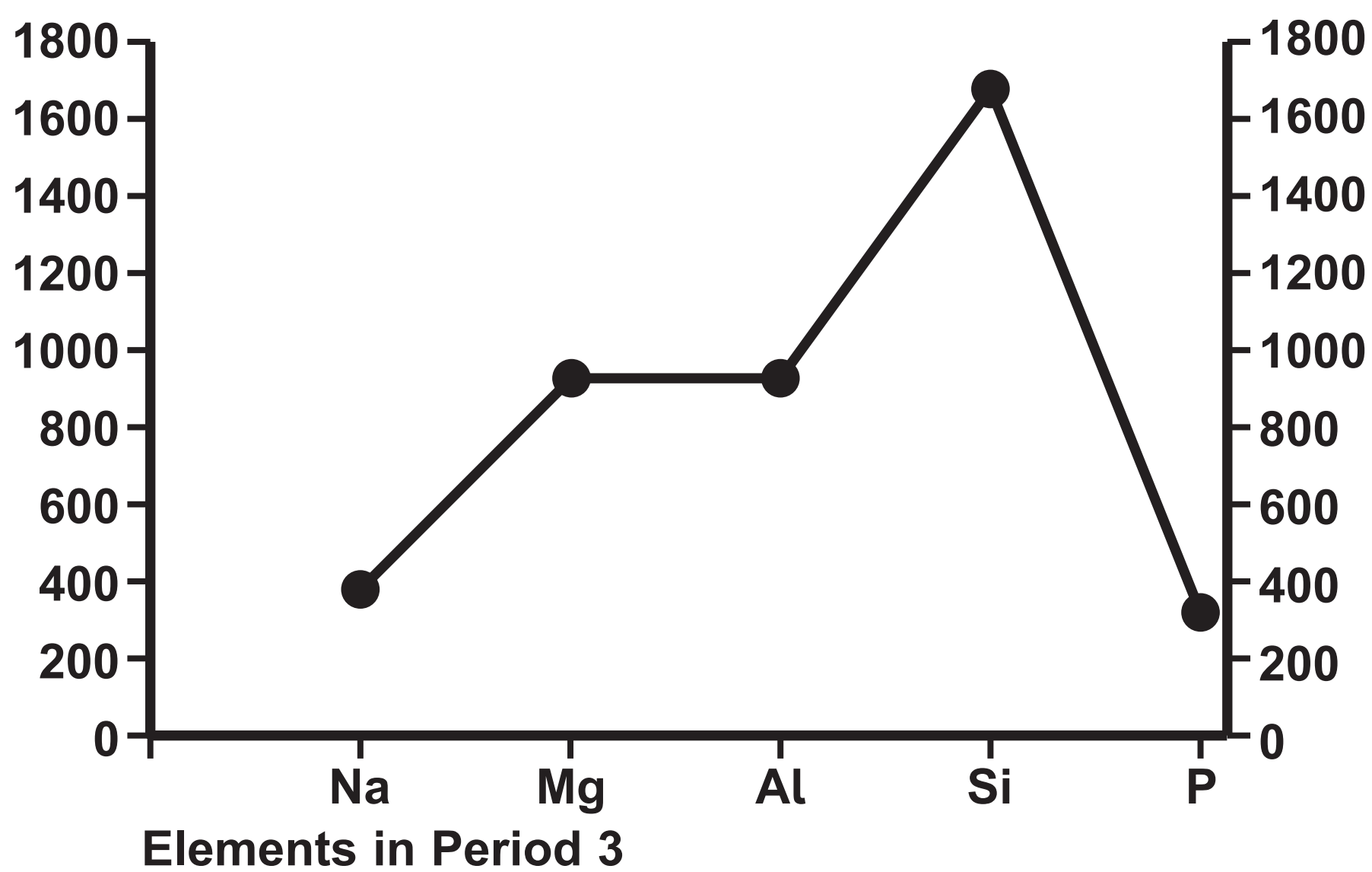
Question 2(b)

s orbital	p orbital

**Question 3(c)**

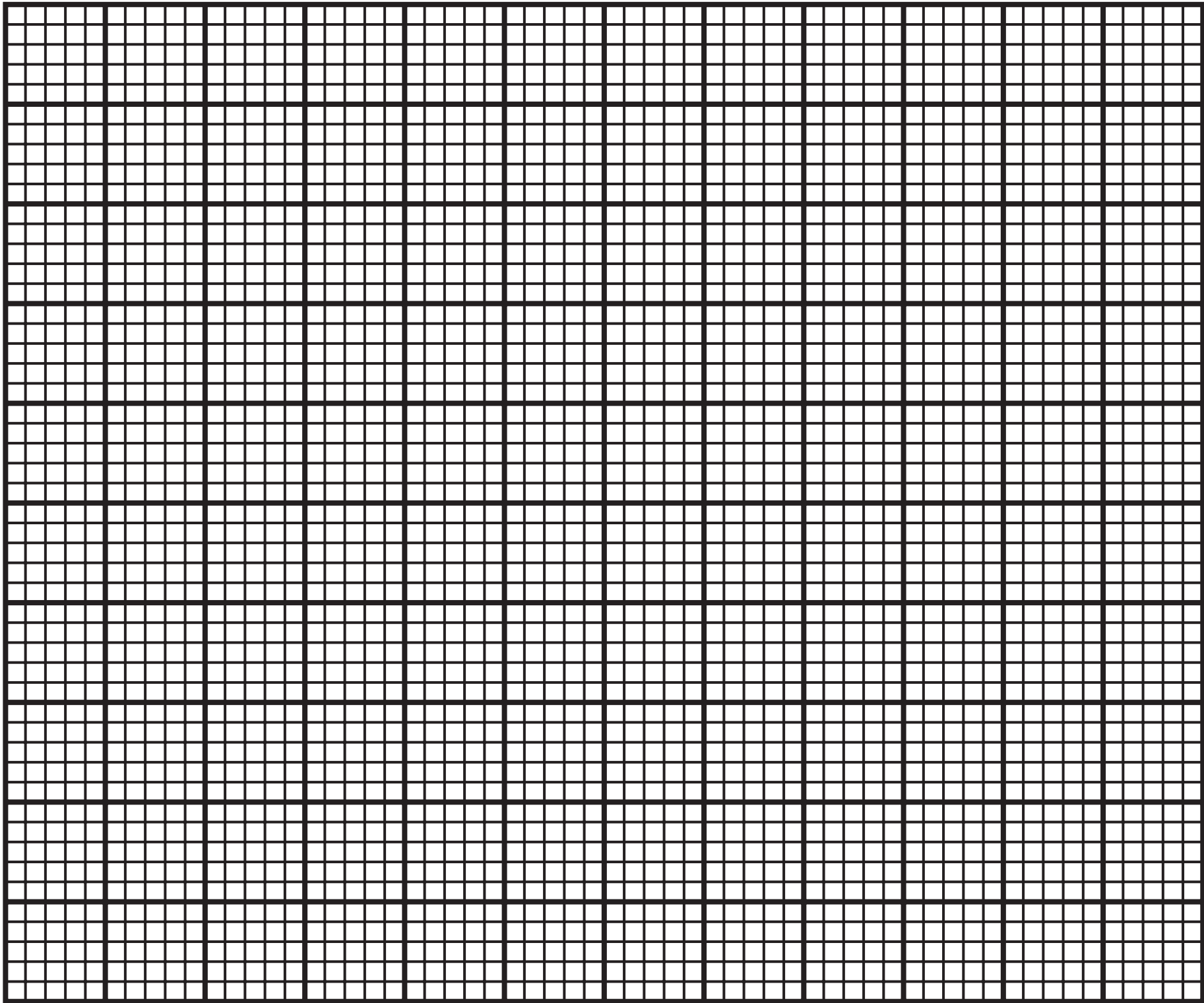
## Question 4

Melting temperature / K



Question 5(a)(i)

$\Delta G / \text{kJ mol}^{-1}$

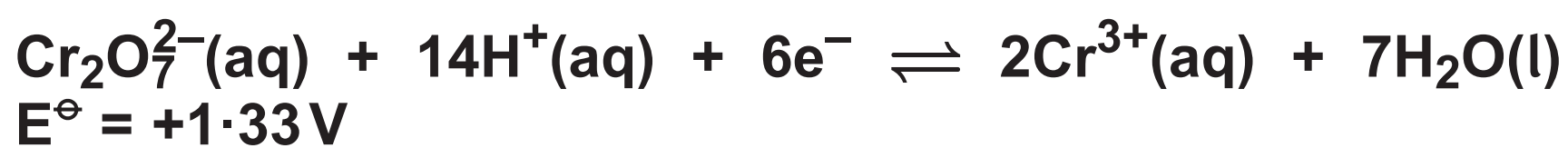


Temperature / K

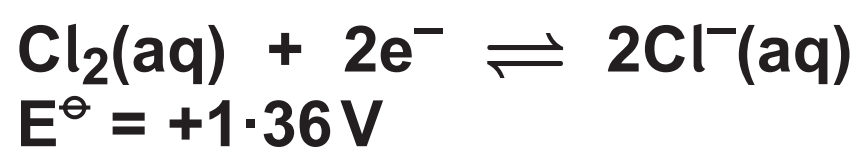


## Question 7(d)

### Equilibrium 1



### Equilibrium 2



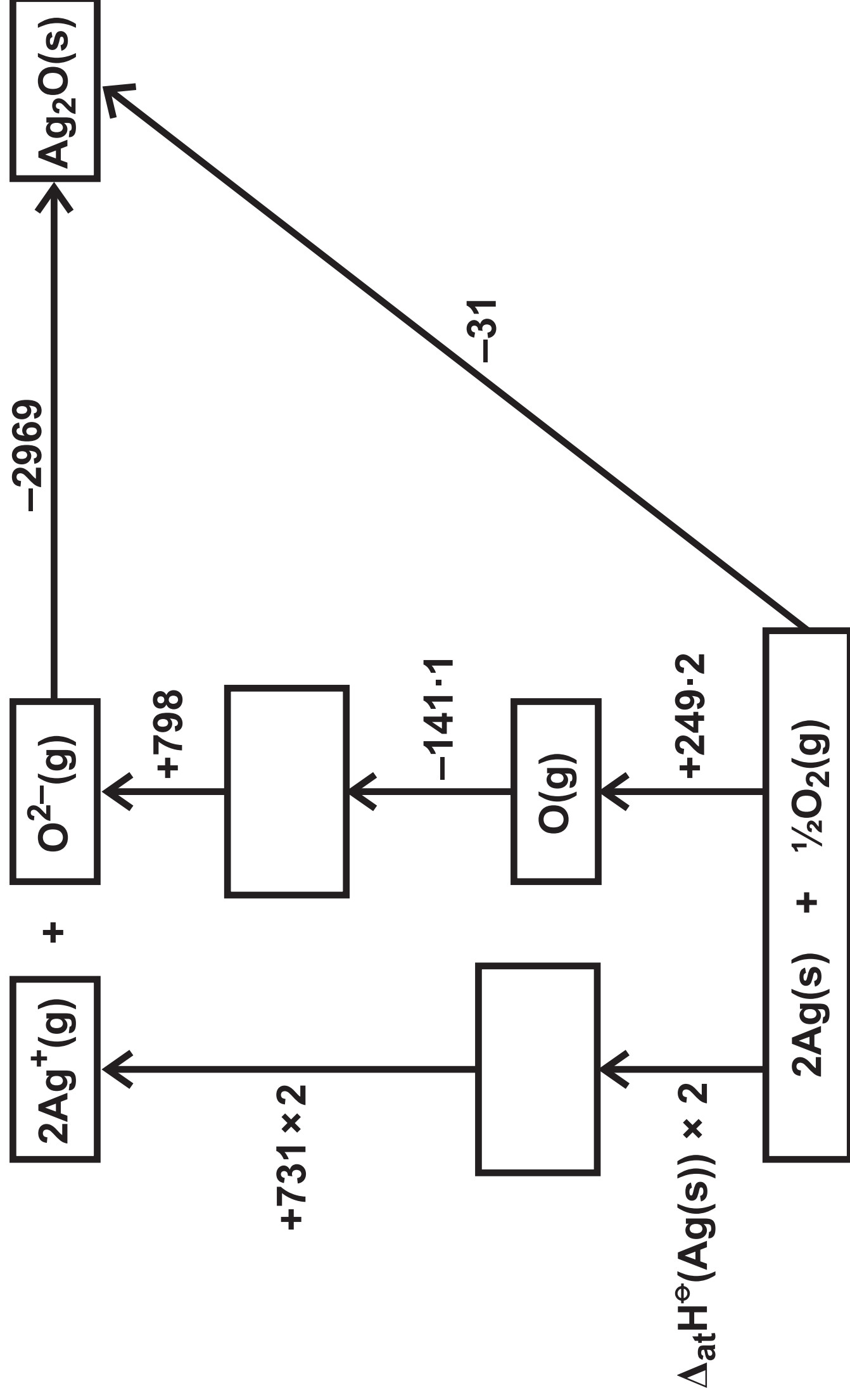
Question 7(b)(ii)

Element	Atomic number	1st ionisation energy / $\text{kJ mol}^{-1}$	2nd ionisation energy / $\text{kJ mol}^{-1}$	Metallic radius / nm
Chromium	24	653	1592	0.129
Calcium	20	590	1145	0.197

**Question 9(b)**

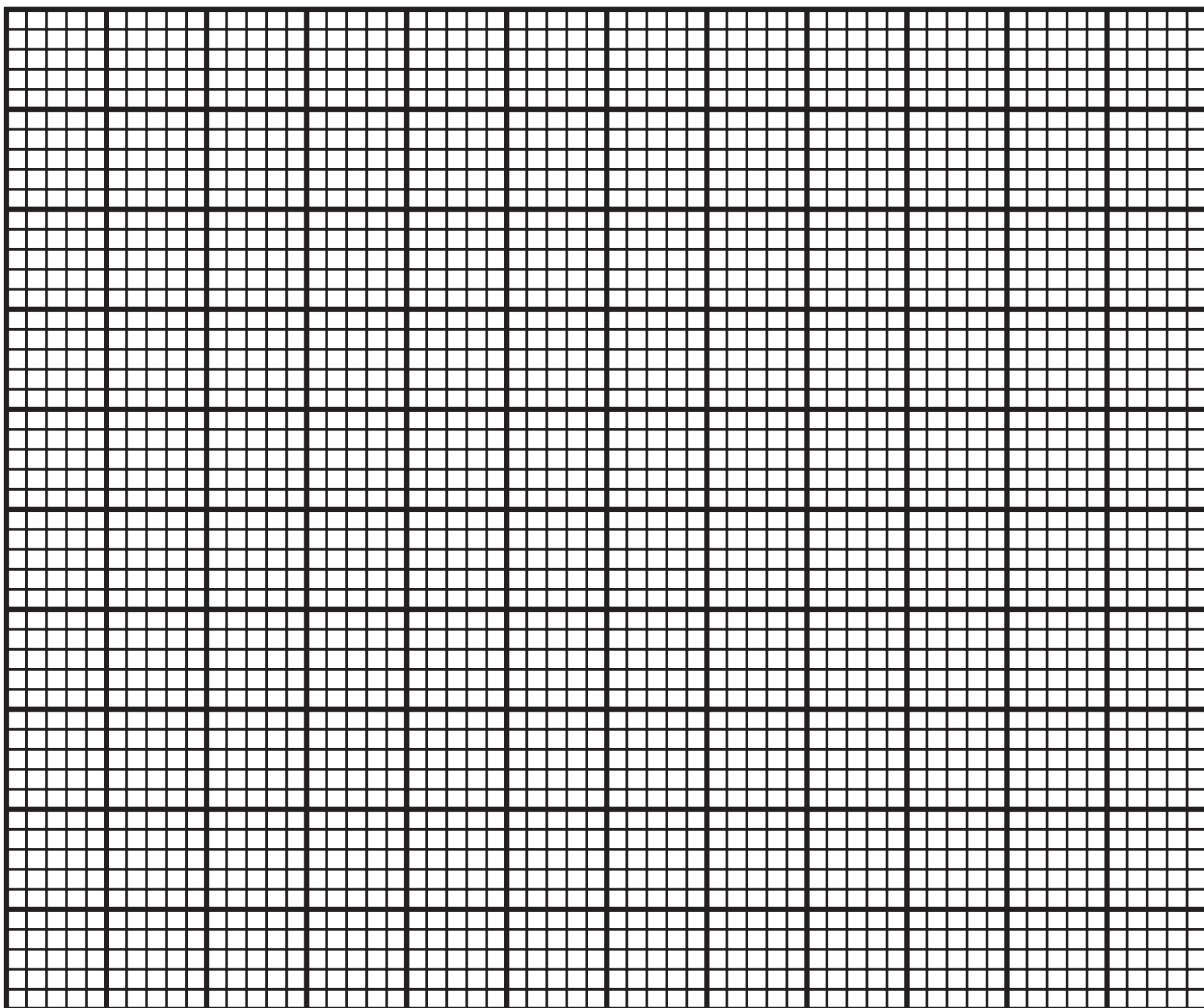
<b>Compound</b>	<b>Experimental lattice energy / <math>\text{kJ mol}^{-1}</math></b>	<b>Theoretical lattice energy / <math>\text{kJ mol}^{-1}</math></b>
<b>Silver chloride</b>	<b>−905</b>	<b>−833</b>

# Question 9(a)



s orbital	p orbital

## Question 5(a)(i)

 $\Delta G / \text{kJ mol}^{-1}$ 

Temperature / K

Half-cell	Electrode system	$E^\ominus / \text{V}$
A	$\text{MnO}_2(\text{s}) + 4\text{H}^+(\text{aq}) + \text{e}^- \rightleftharpoons \text{Mn}^{3+}(\text{aq}) + 2\text{H}_2\text{O}(\text{l})$	+0.95
B	$\text{Mn}^{3+}(\text{aq}) + \text{e}^- \rightleftharpoons \text{Mn}^{2+}(\text{aq})$	+1.51

# Question 9(a)

