

Combined Science  
Paper 5  
Higher 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.**

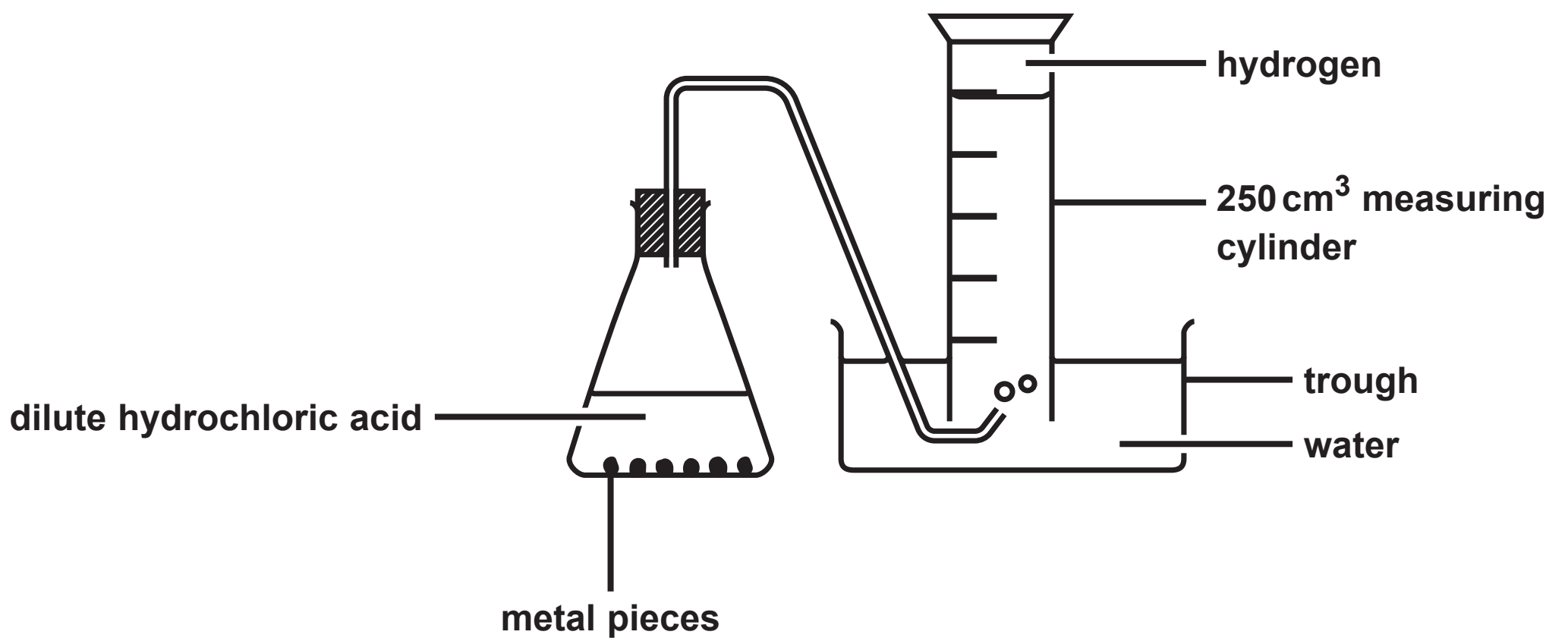
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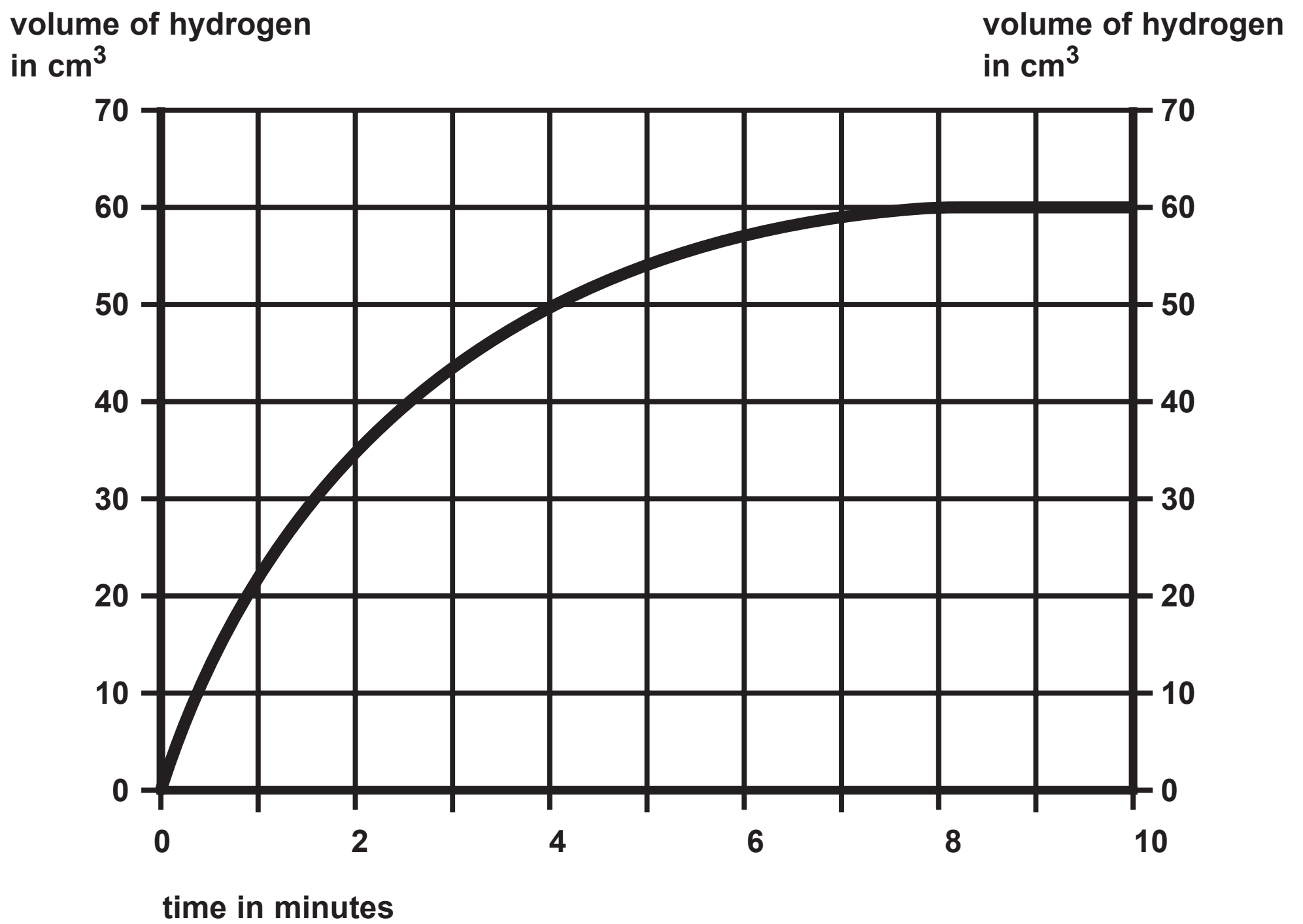
## Question 1

FIGURE 1



## Question 1(a)

FIGURE 2



## Question 2(d)

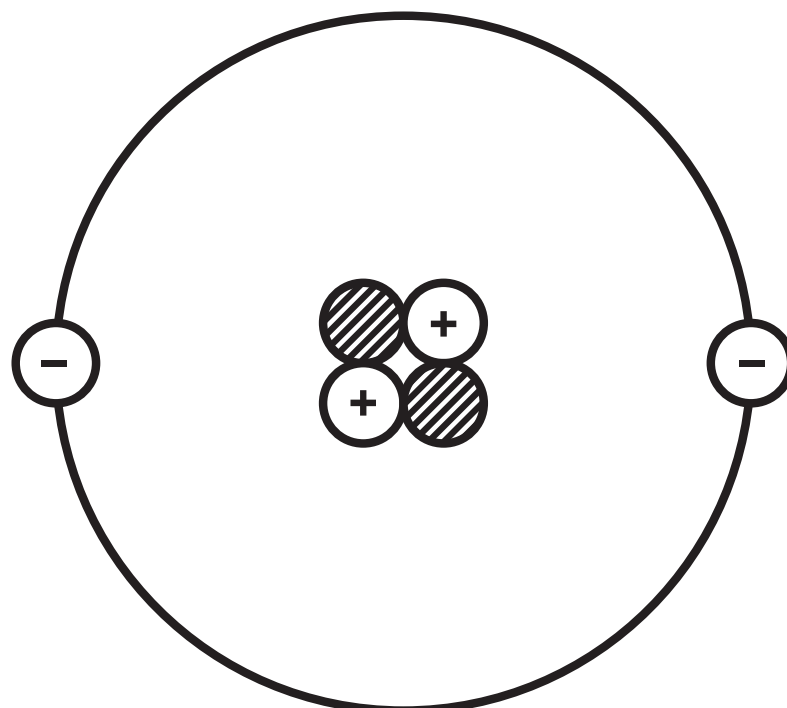
FIGURE 3

## Key

⊖ = electron

⊗ = neutron

⊕ = proton



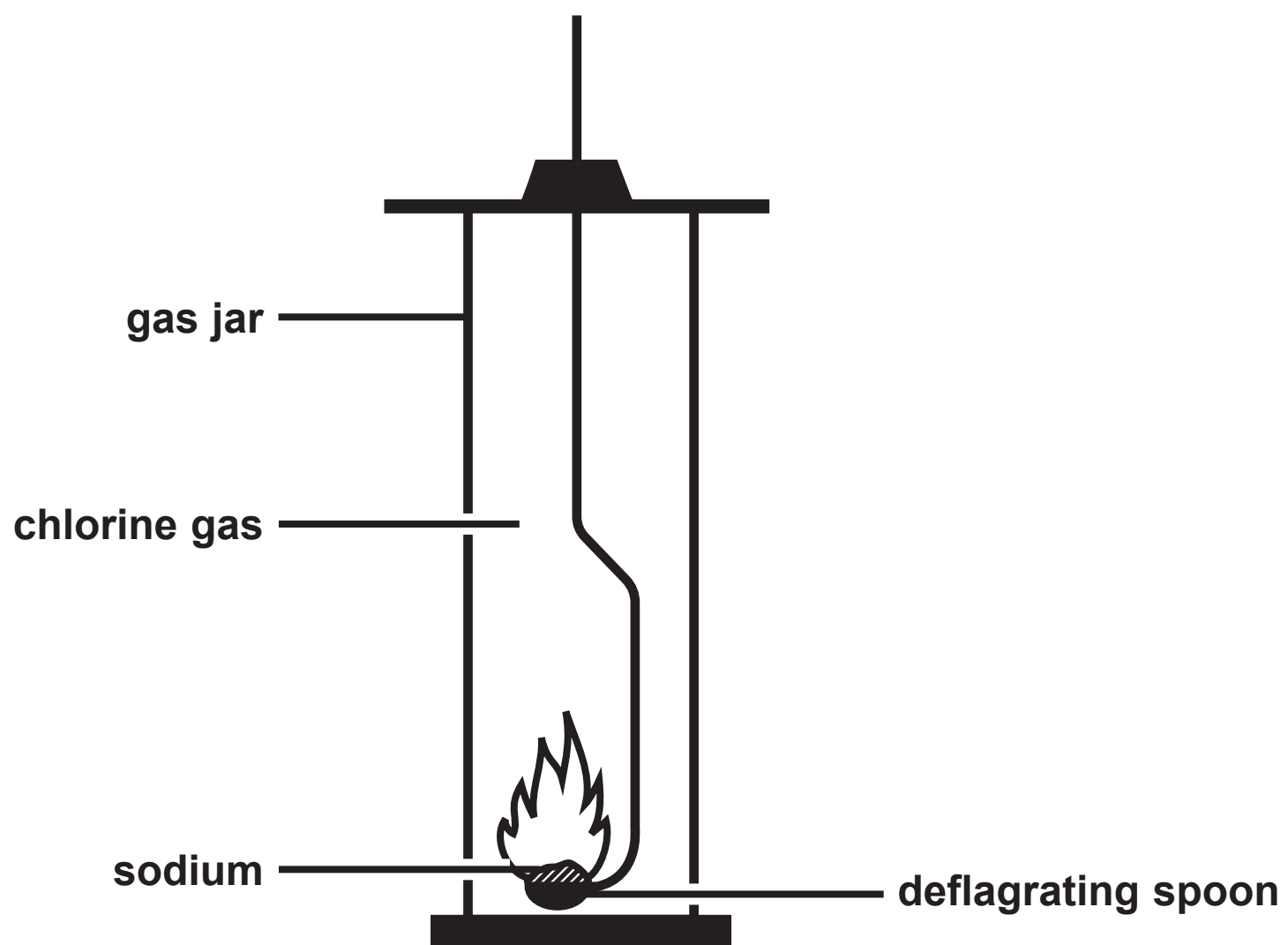
Question 3(a)

FIGURE 4

pollutant	mass of pollutant given out in g per kilometre driven	
	petrol engine	diesel engine
carbon dioxide	210	180
carbon monoxide	1·5	0·10
unburnt hydrocarbons	0·13	0·020
nitrogen oxides	0·36	2·0
particulates	0·0060	0·046
sulfur dioxide	0·0089	0·0037

## Question 4(c)

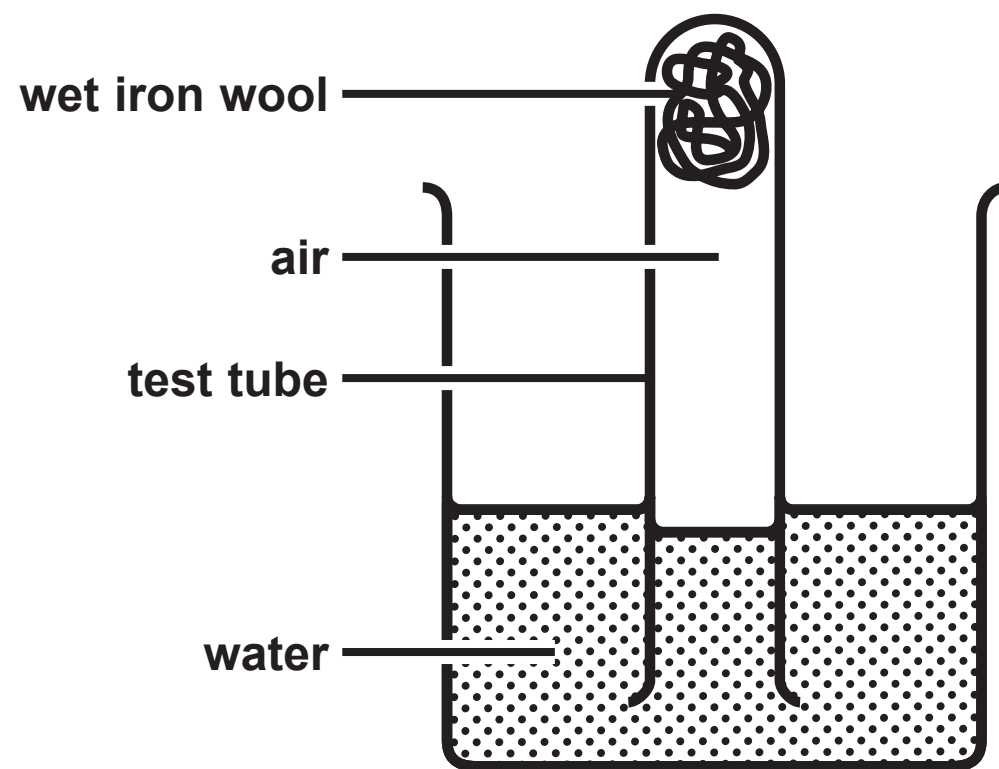
FIGURE 5





## Question 5(d)

FIGURE 6



Question 6(a)(i)

☐

A

☐

B

☐

C

☐

D

energy change	
breaking a bond	making a bond
energy is released	energy is released
energy is released	energy is absorbed
energy is absorbed	energy is released
energy is absorbed	energy is absorbed

Question 6(a)(i)

☐

A

☐

B

☐

C

☐

D

energy change	
breaking a bond	making a bond
energy is released	energy is released
energy is released	energy is absorbed
energy is absorbed	energy is released
energy is absorbed	energy is absorbed

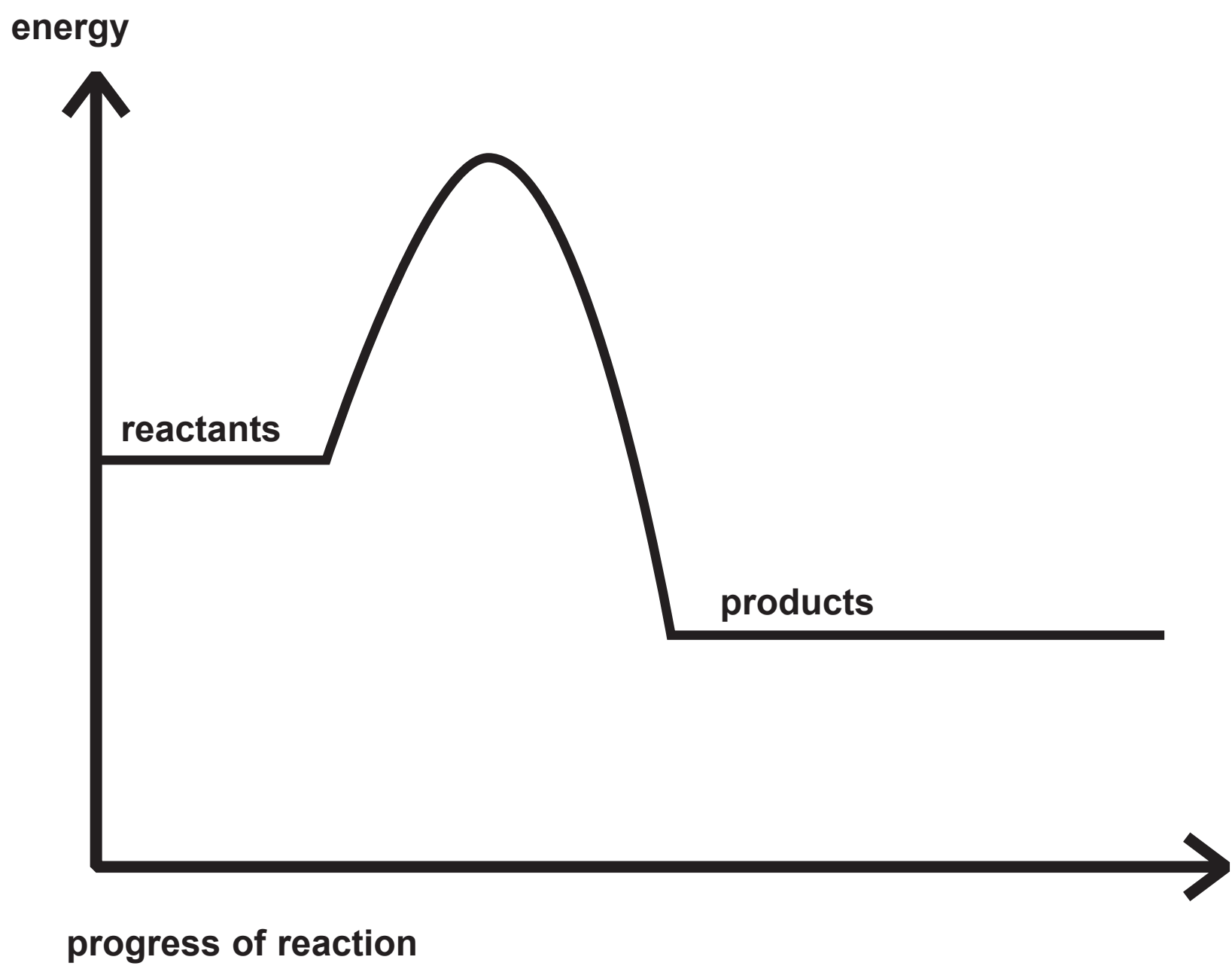
## Question 6(a)(ii)

FIGURE 7

bond	bond energy in $\text{kJ mol}^{-1}$
H—H	436
F—F	158
H—F	562

## Question 6(b)

FIGURE 8



## Question 6(b)

FIGURE 8

