

Chemistry
PAPER 1
Higher Tier

Friday 17 May 2024 – Morning

Time: 1 hour 45 minutes

Diagram Booklet

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

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.

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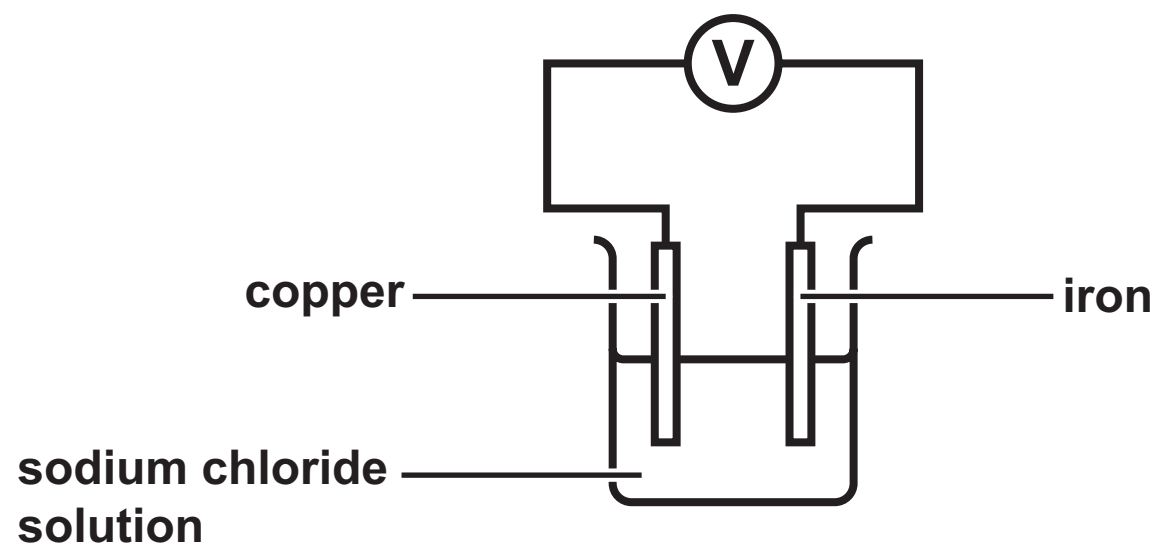
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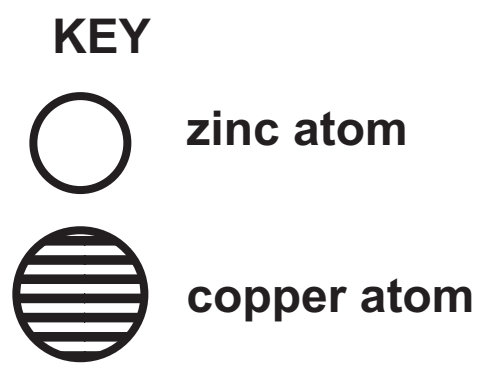
Question 1(a)

FIGURE 1

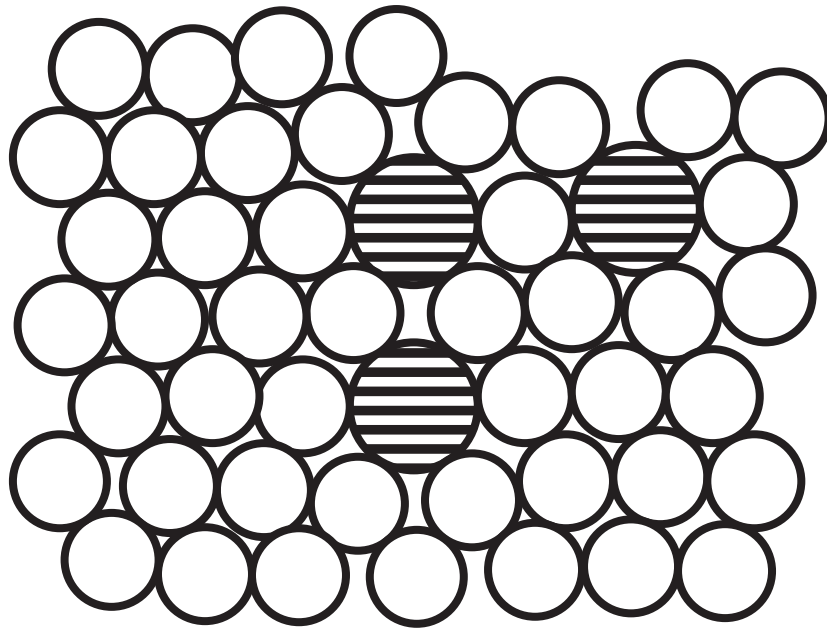


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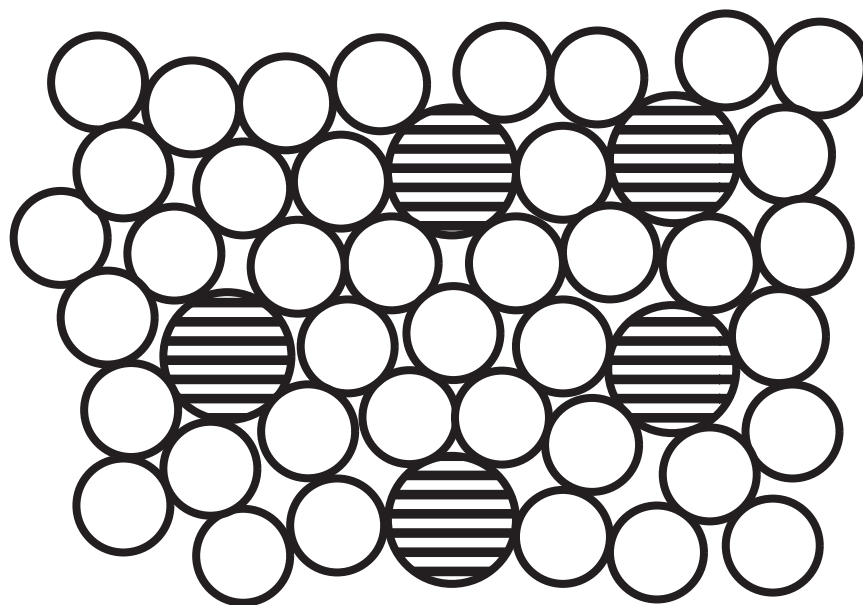
FIGURE 2



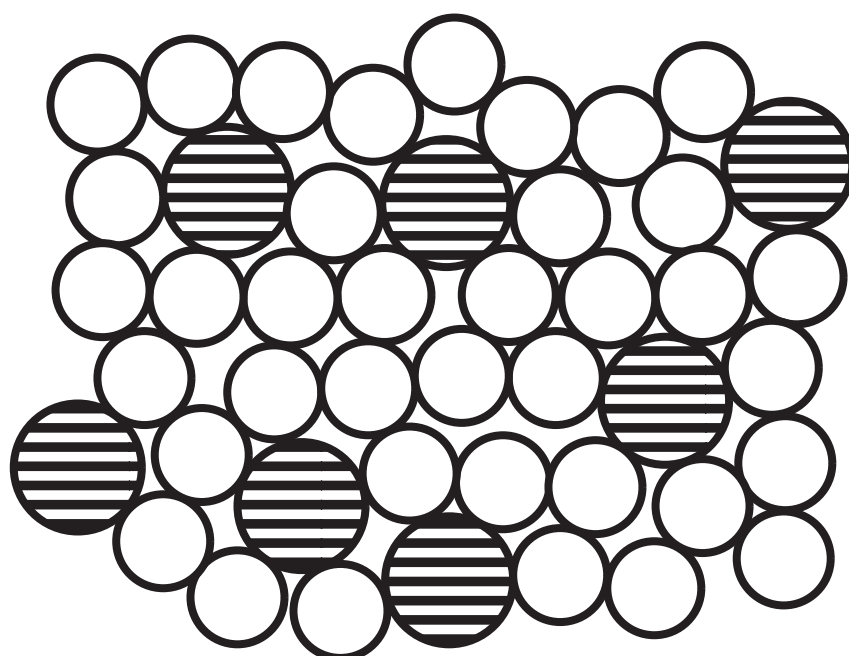
alloy A



alloy B

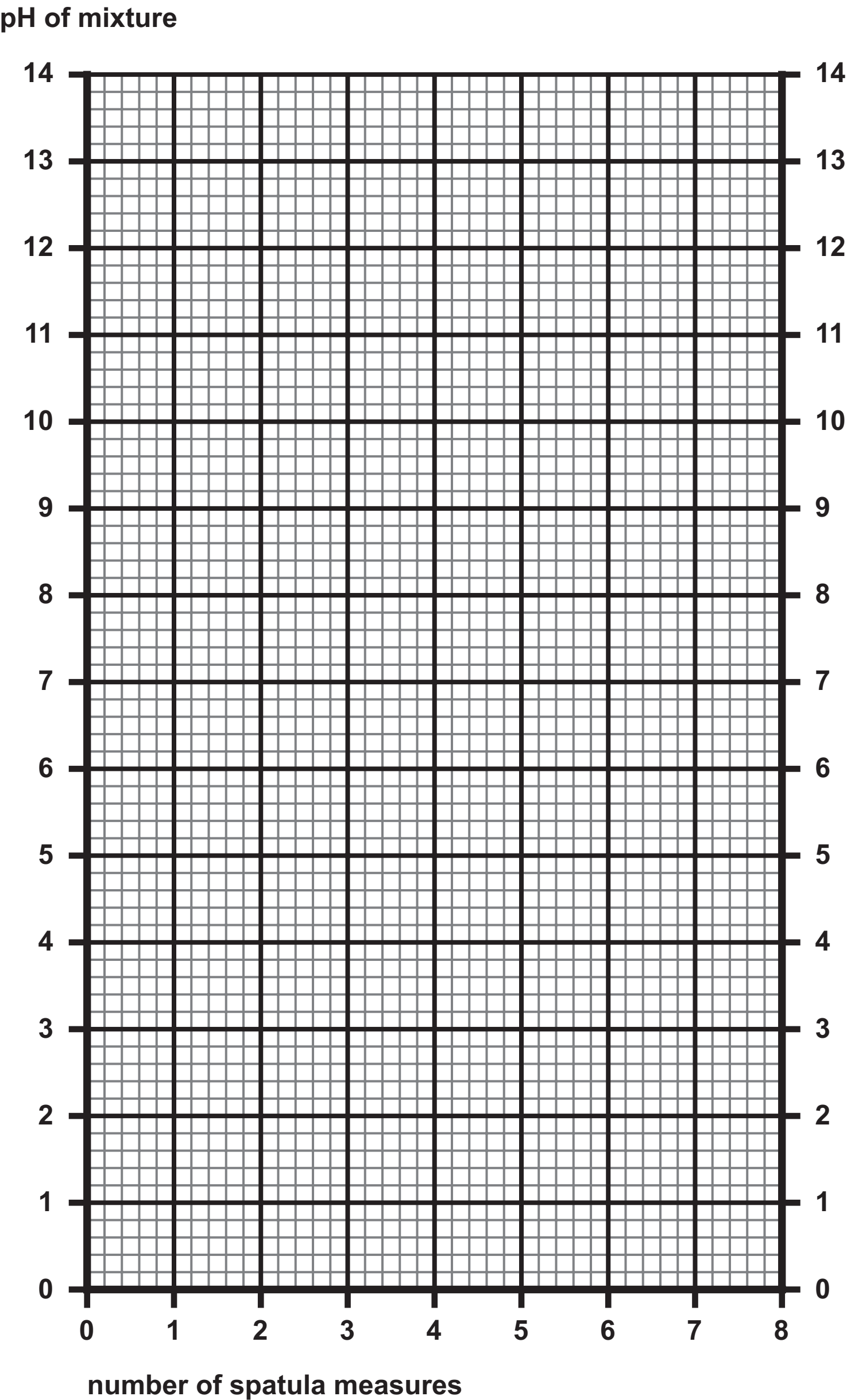


alloy C





Question 2(b)(iii)



Question 4(a)

FIGURE 4

| | mass in tonnes |
|-------------------------------------|----------------|
| mass of titanium oxide | 100·00 |
| mass of titanium produced | 45·26 |
| theoretical mass of titanium formed | 60·00 |

Question 7(a)

FIGURE 5

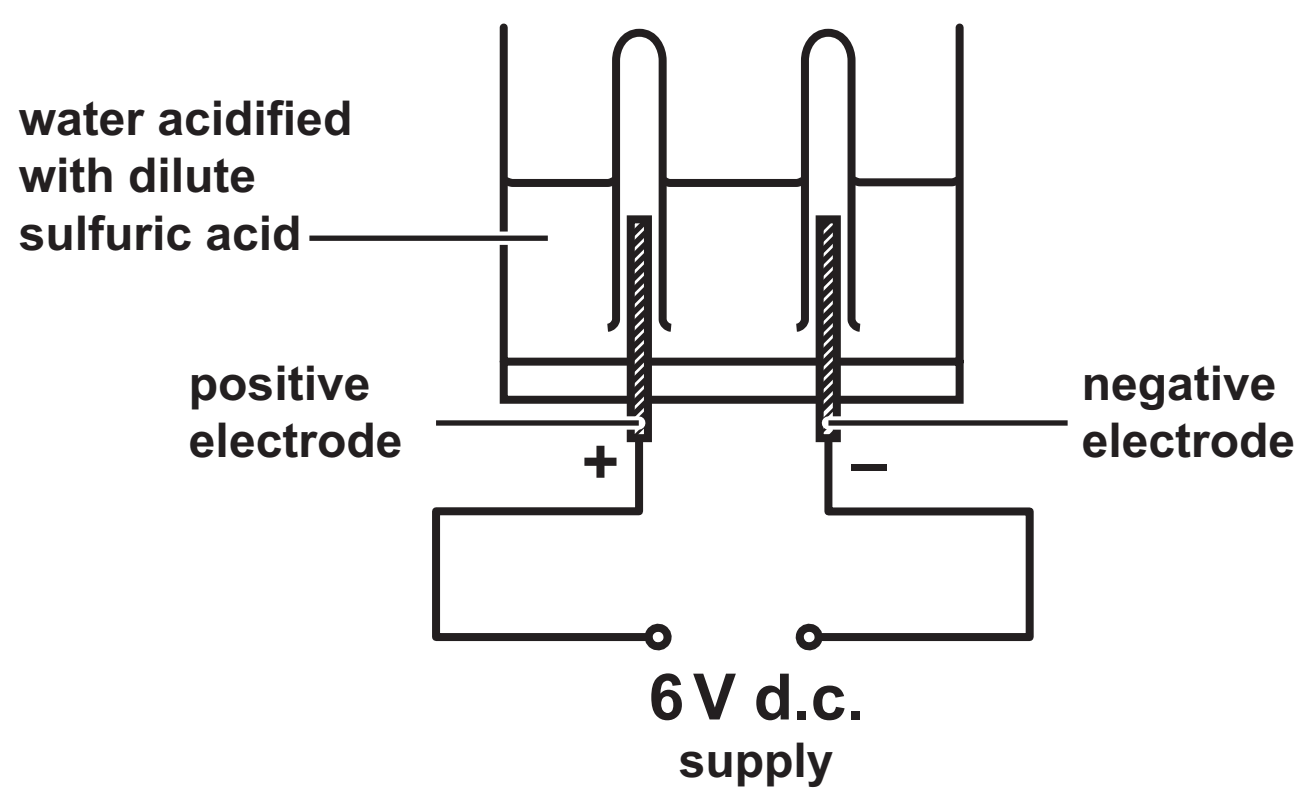


diagram A

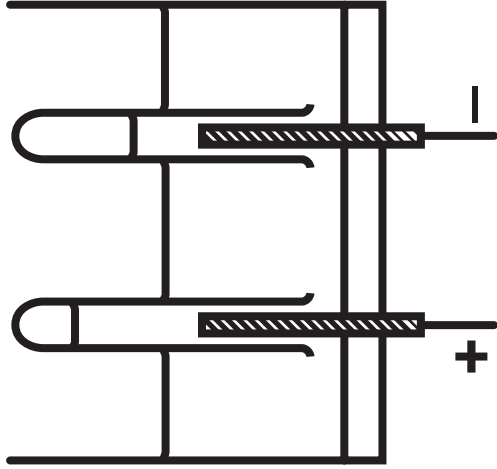


diagram B

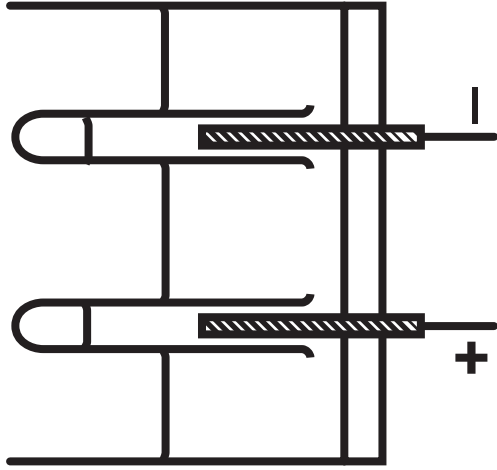


diagram C

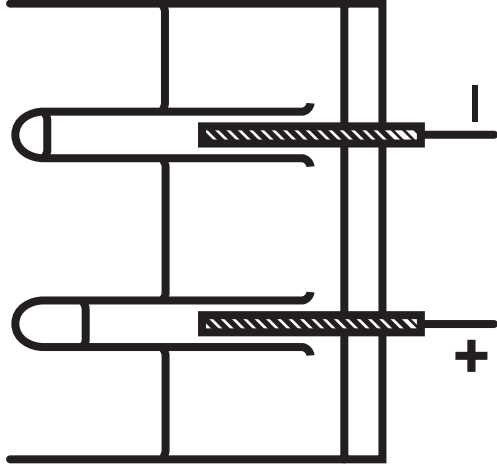
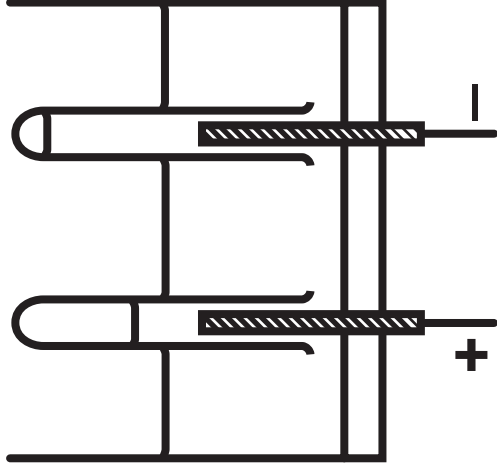


diagram D



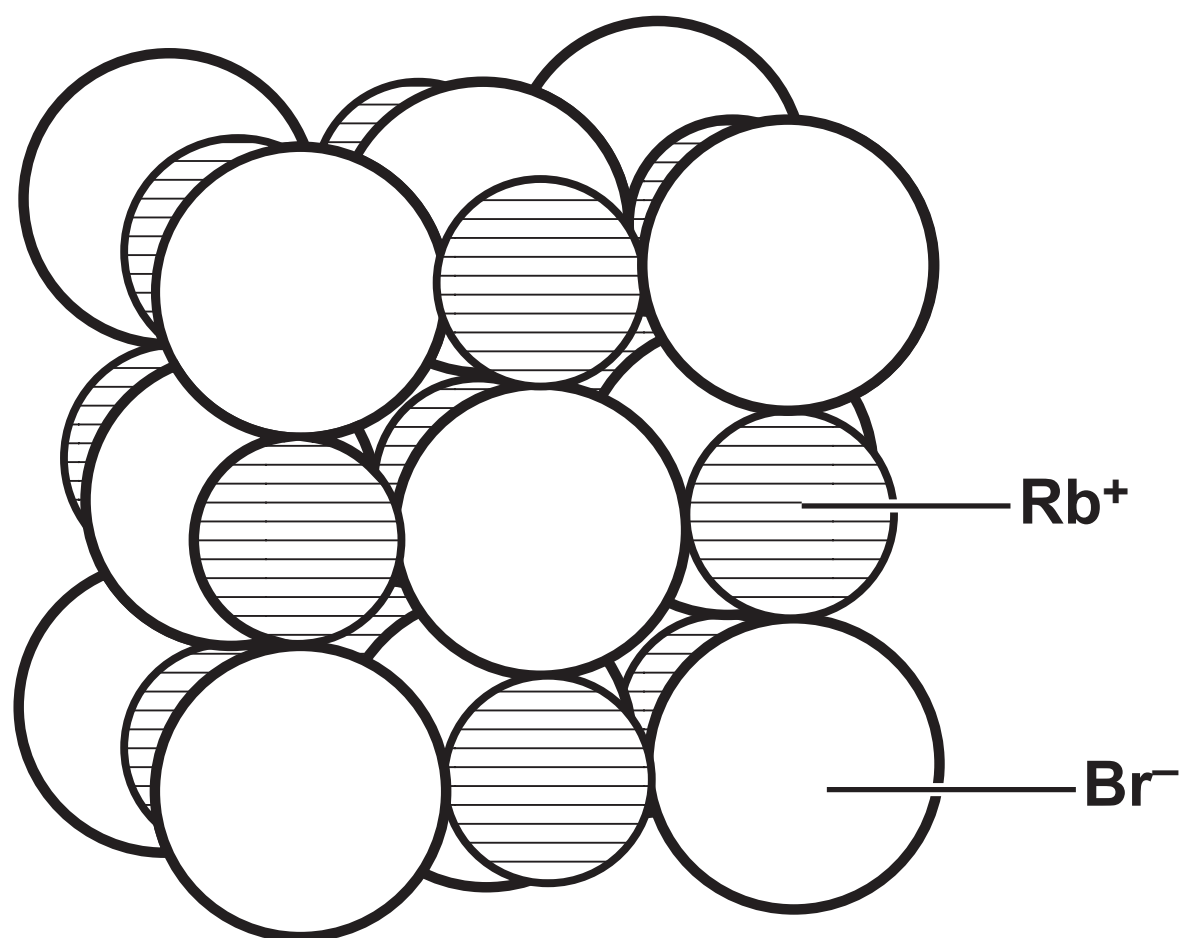
Question 7(b)

FIGURE 6

| | mass of cathode in g | appearance of copper sulfate solution |
|---------------------|-------------------------|--|
| before electrolysis | 5.32 | pale blue solution |
| after electrolysis | 5.87 | pale blue solution |

Question 8(b)

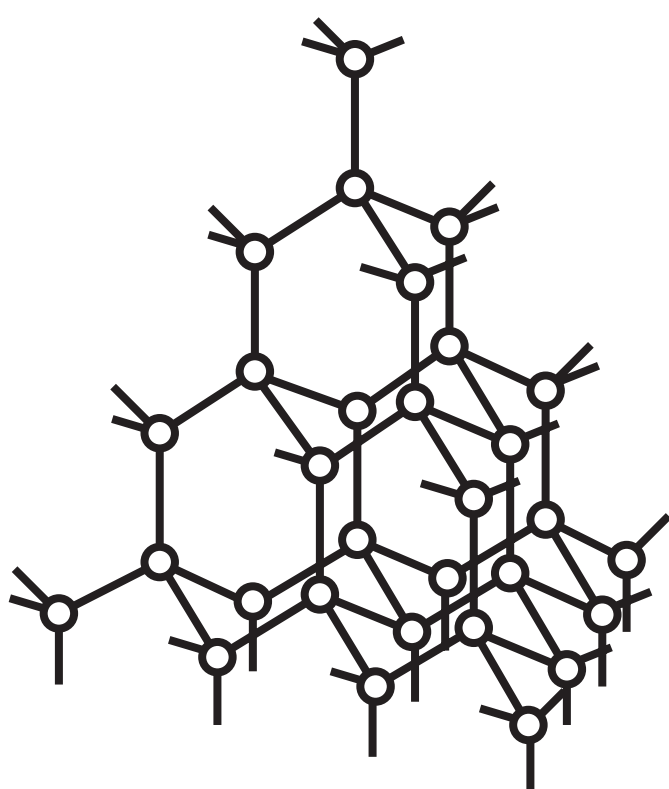
FIGURE 7



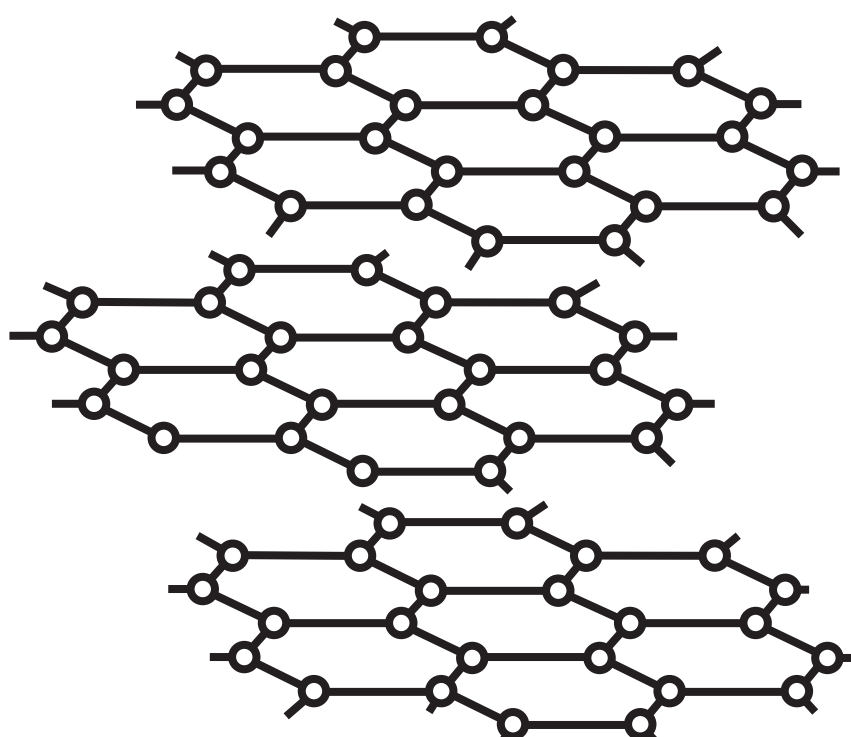
Question 8(c)

FIGURE 8

diamond



graphite



Question 9(a)

FIGURE 9

| metal | observations with dilute hydrochloric acid |
|-------|---|
| D | Bubbles formed quickly. After three minutes all the metal had reacted. |
| E | Bubbles formed very quickly. No metal remaining after three minutes. |
| F | A few bubbles were seen to form. The metal looked unchanged after three minutes. |
| G | |

Question 9(a)

FIGURE 10

| | | | |
|---------------|----------|----------|----------------|
| E | D | G | F |
| most reactive | | | least reactive |

Question 2(b)(iii)

