**Paper Reference(s)  9CH0/02**
**Pearson Edexcel Level 3 GCE**

# Chemistry
## Advanced
## PAPER 2: Advanced Organic and Physical Chemistry

**Tuesday 18 June 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** | | | | | | |



Pearson

## INSTRUCTIONS

**There may be spare copies of some diagrams in case you need them.**

## CONTENTS


**Page**

3 Question 3(a) – Blank
4 Question 3(c)
5 Question 3(e)
6 Question 5(a)
7 Question 5(c)
8 Question 5(c)(ii)
9 Question 5(c)(iii) – Blank
10 Question 5(d)
11 Question 5(d)(iii)
12 Question 6(c)(ii) – Blank
13 Question 6(d)
14 Question 7(c)
15 Question 7(c)(i) – Blank
16 Question 7(c)(ii) – Blank
17 Question 7(c)(iii)
18 Question 8
19 Question 8(a)(ii) – Blank
20 Question 8(b)
21 Question 8(c)
22 Question 8(d)
23 Question 8(e)

**Spare Copies**

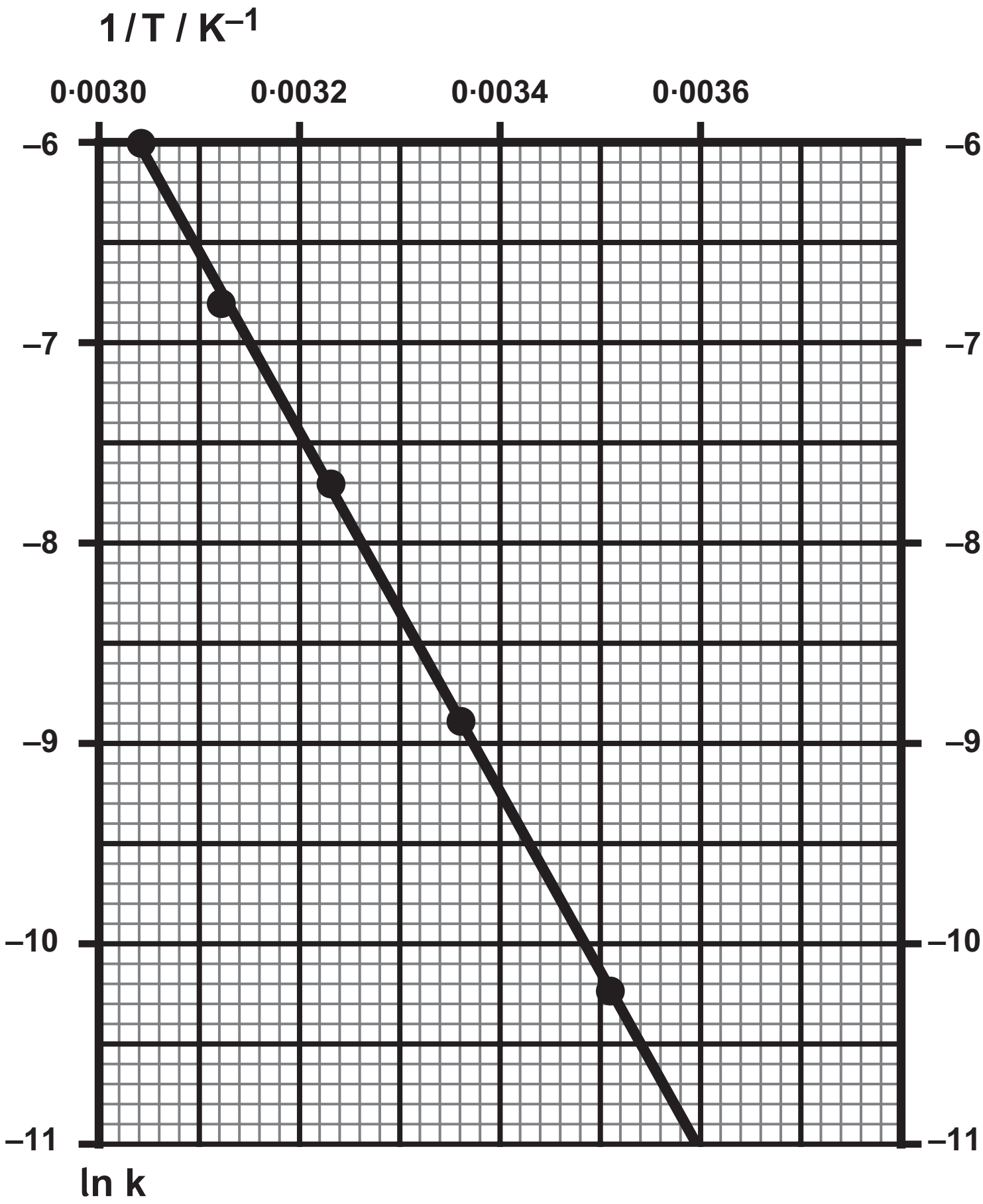
24 Question 3(a) – Blank
25 Question 3(e)
26 Question 5(c)(ii)
27 Question 5(c)(iii) – Blank
28 Question 5(d)(iii)
29 Question 6(c)(ii) – Blank
30 Question 6(d)
31 Question 7(c)(i) – Blank
32 Question 7(c)(ii) – Blank
33 Question 8(a)(ii) – Blank
34 Question 8(b)

## Question 3(a) – Blank

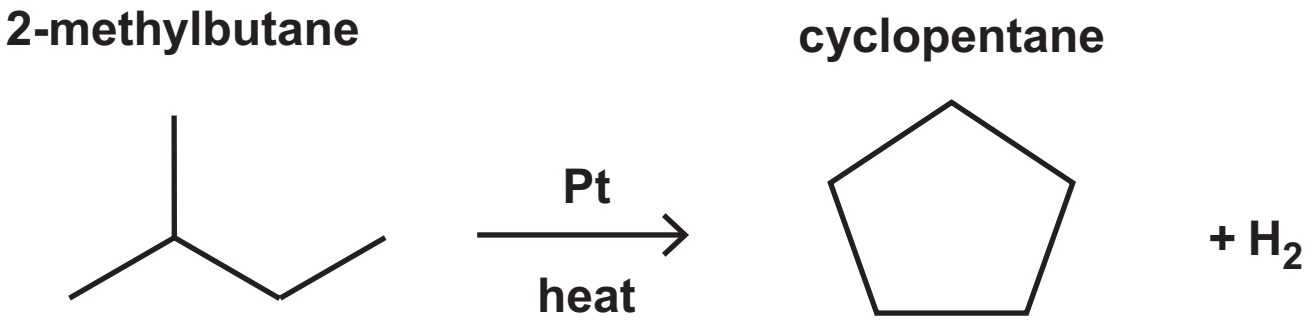
**Question 3(c)**

| Experiment | $[H_2O_2(aq)]$ / mol dm$^{-3}$ | $[I^-(aq)]$ / mol dm$^{-3}$ | Rate / mol dm$^{-3}$ s$^{-1}$ |
|---|---|---|---|
| 1 | 0·100 | 0·0500 | $8{\cdot}90 \times 10^{-7}$ |
| 2 | 0·400 | 0·0500 | $3{\cdot}56 \times 10^{-6}$ |
| 3 | 0·200 | 0·100 | $3{\cdot}56 \times 10^{-6}$ |

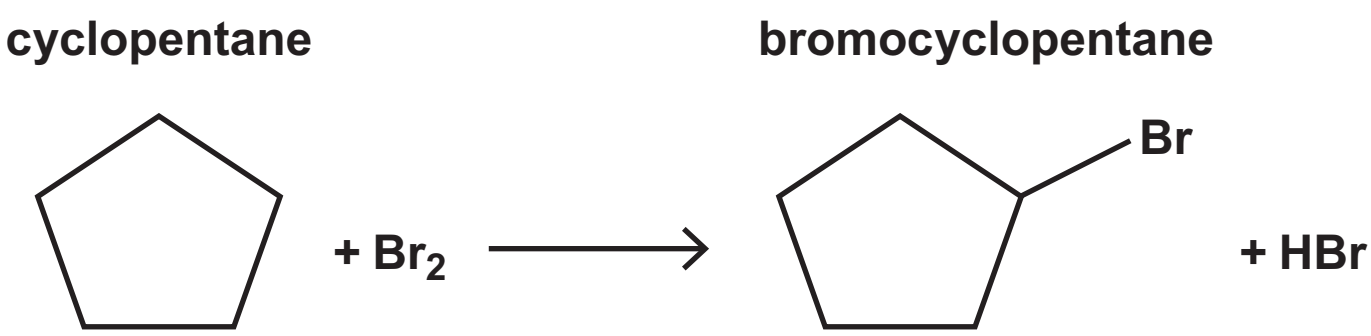
**Question 3(e)**



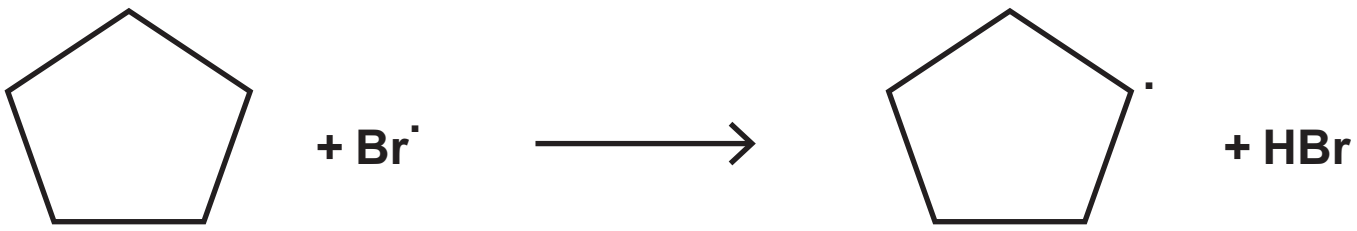
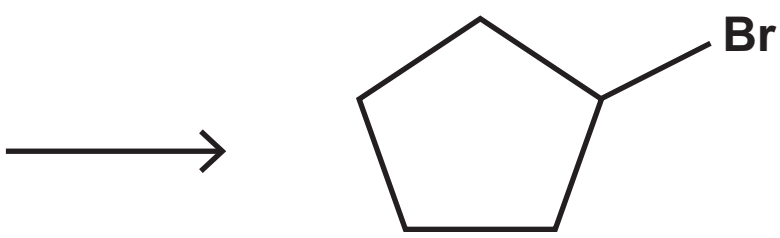
**Question 5(a)**



**Question 5(c)**

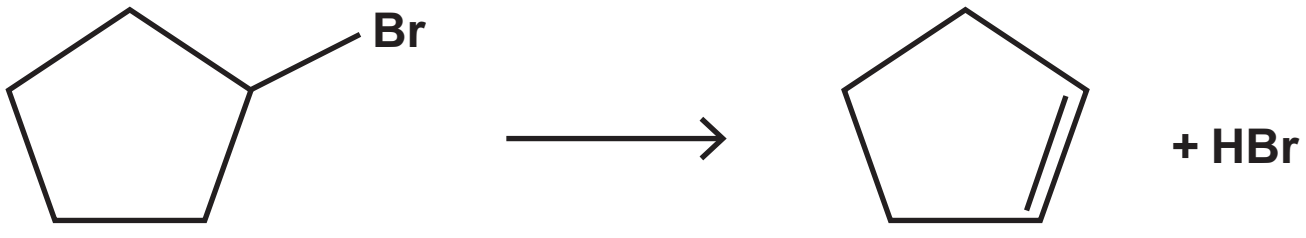


**Question 5(c)(ii)**

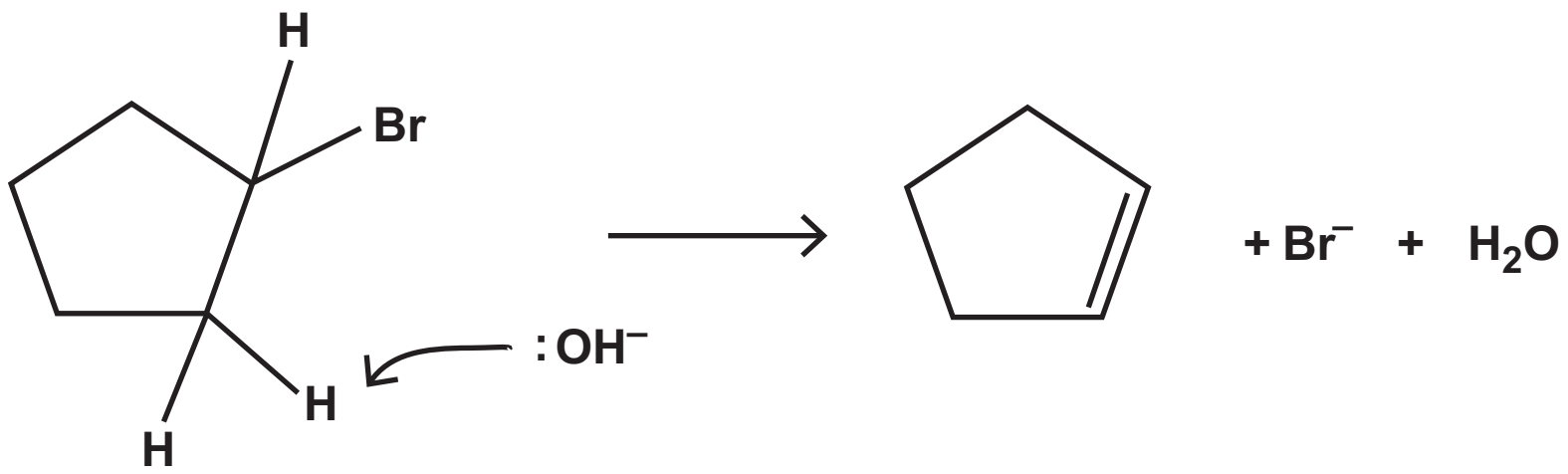
| Step | Equation(s) |
|---|---|
| Initiation | |
| Propagation | 1.  <br>2. |
| Termination |   |

## Question 5(c)(iii) – Blank

**Question 5(d)**



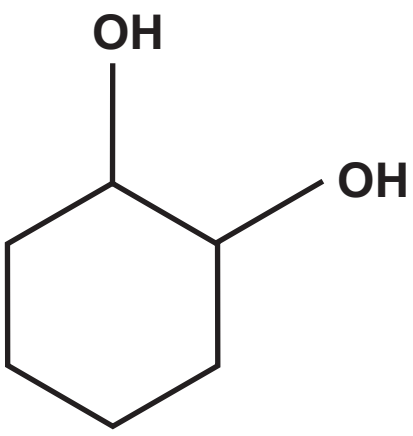
**Question 5(d)(iii)**



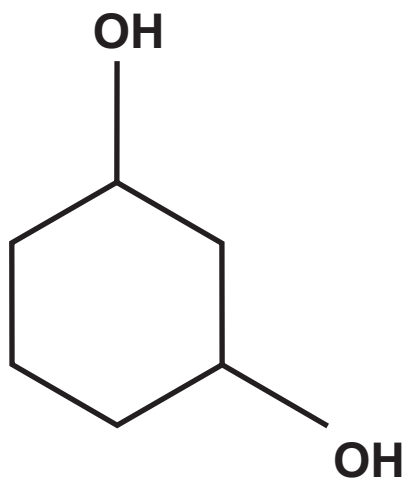
## Question 6(c)(ii) – Blank

**Question 6(d)**

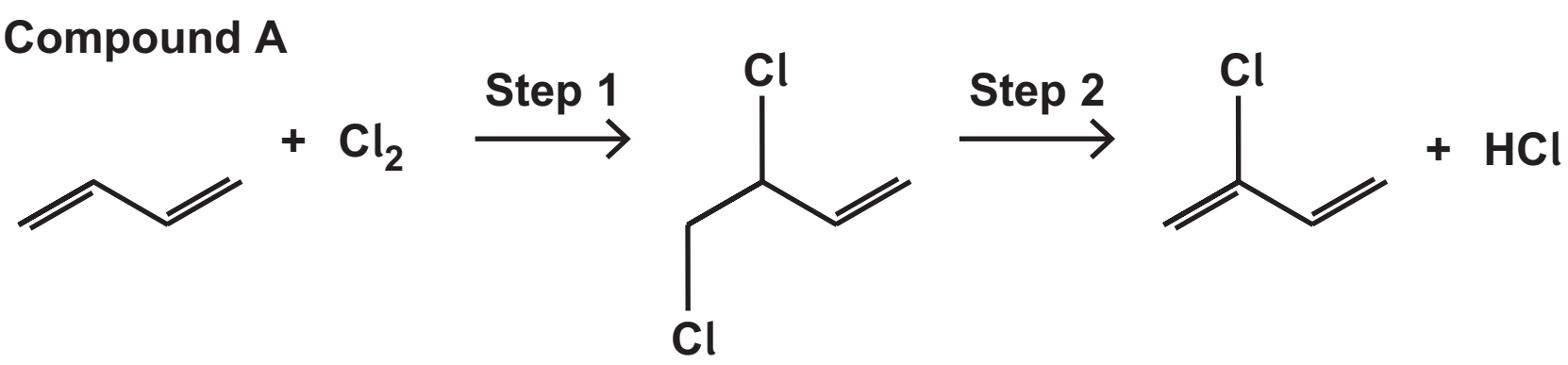
**cyclohexane-1,2-diol**




**cyclohexane-1,3-diol**



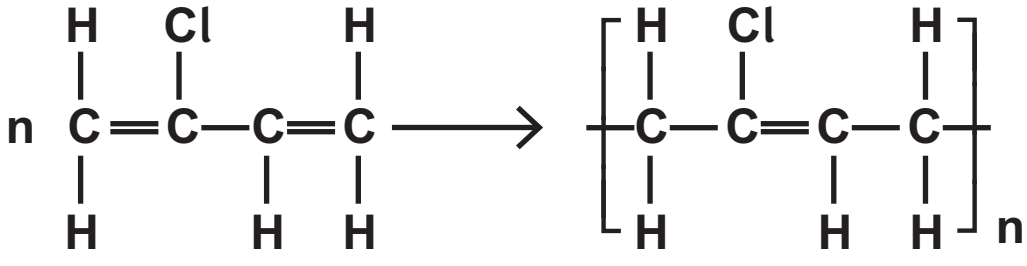
**Question 7(c)**



## Question 7(c)(i) – Blank

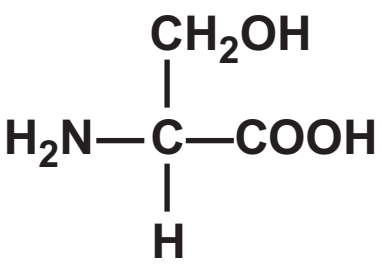
## Question 7(c)(ii) – Blank

**Question 7(c)(iii)**

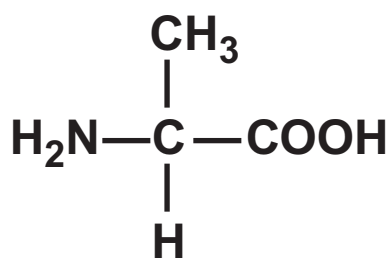


**Question 8**

**serine**



**alanine**

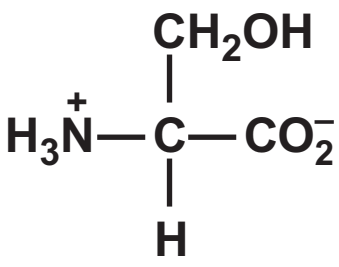


## Question 8(a)(ii) – Blank

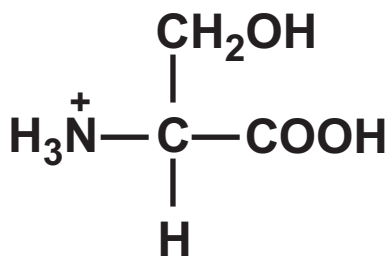
## Question 8(b)

**Question 8(c)**

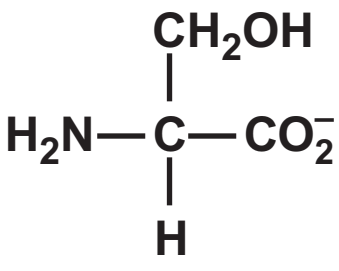
**FORMULA A**



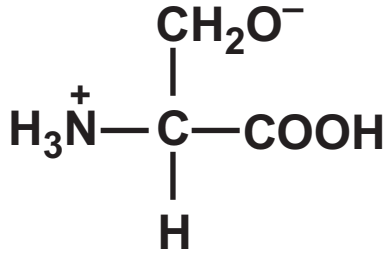
**FORMULA B**



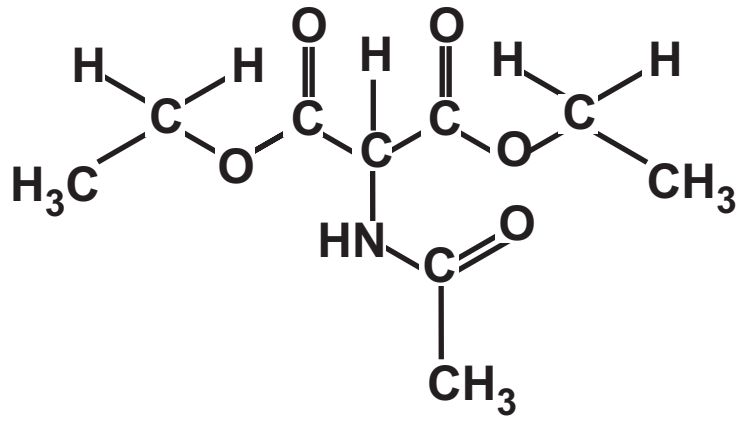
**FORMULA C**



**FORMULA D**

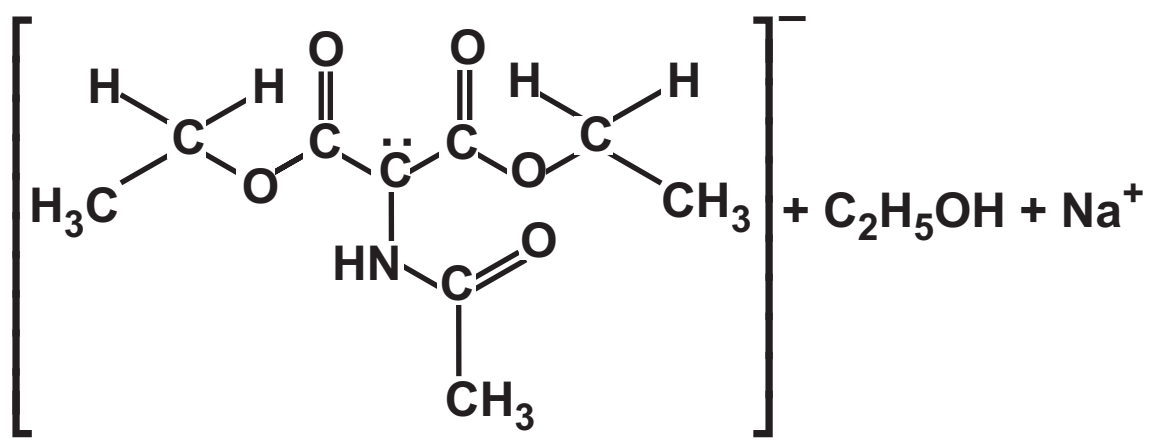


**Question 8(d)**



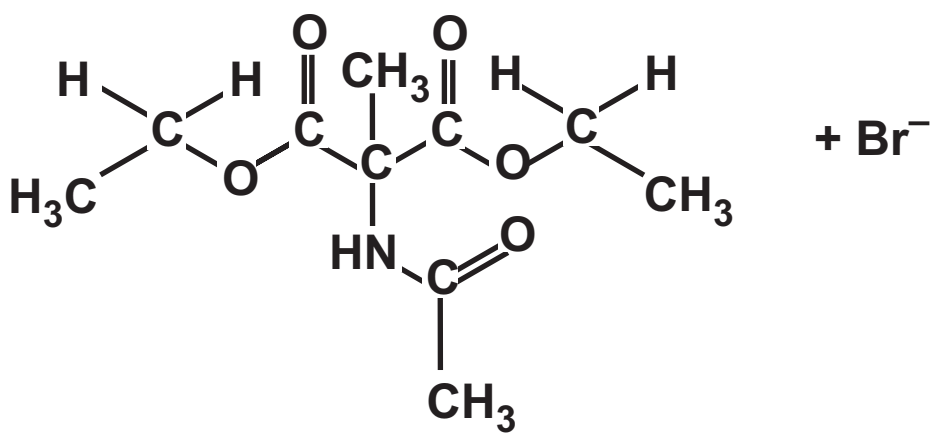
**Compound X**

Step 1 $C_2H_5O^-Na^+$



$+ C_2H_5OH + Na^+$

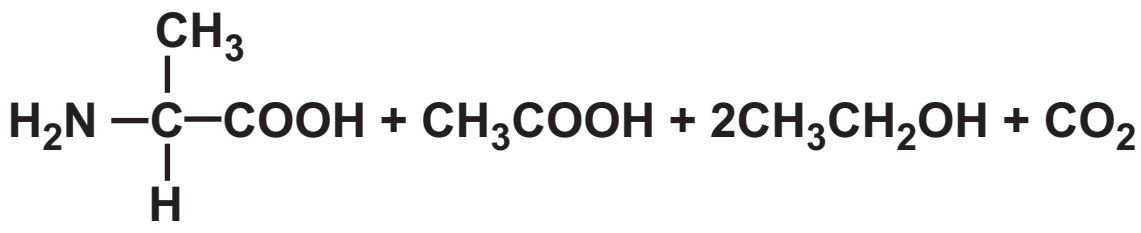
Step 2 $CH_3Br$



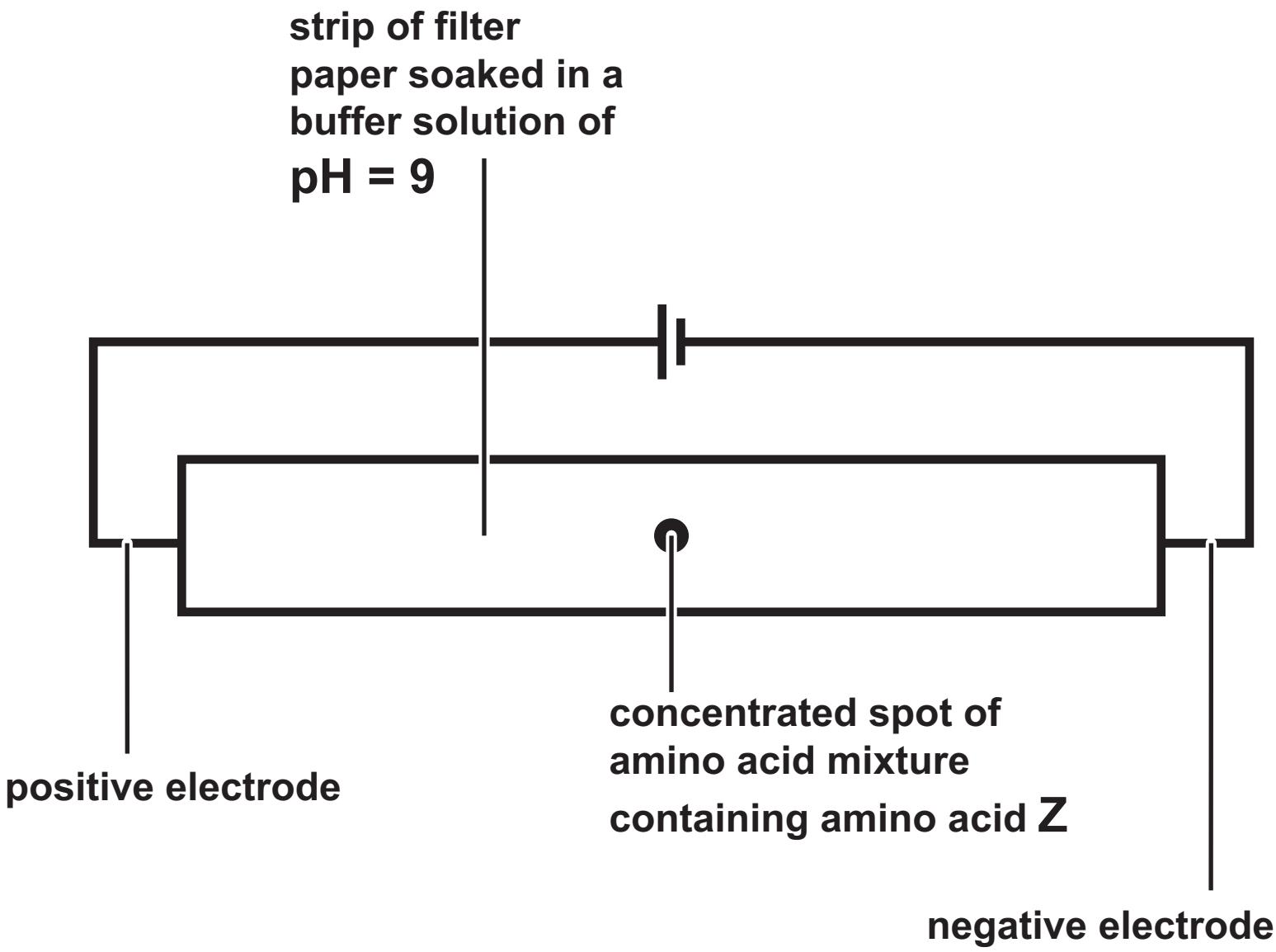
$+ Br^-$

**Compound Y**

Step 3

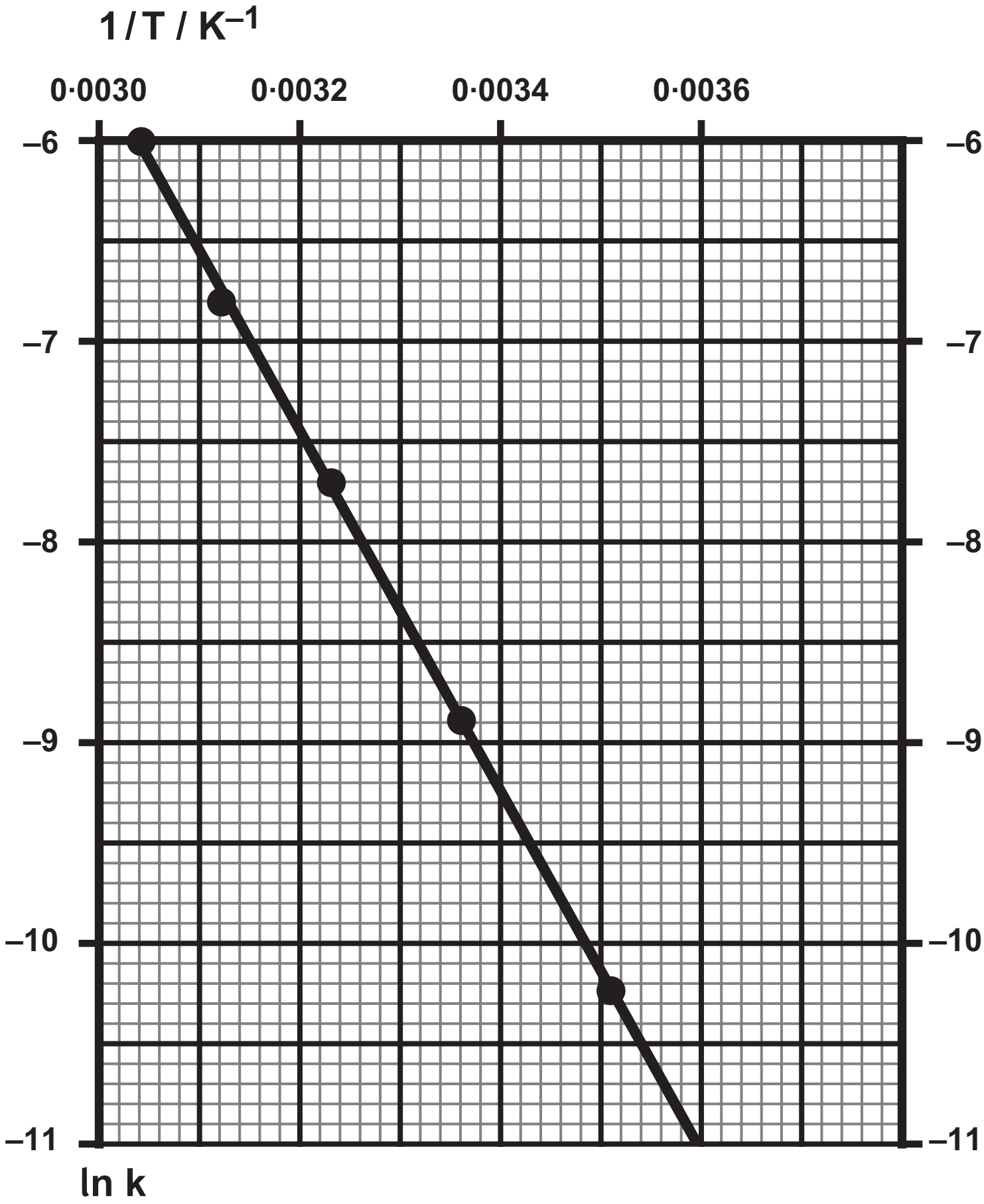


**Question 8(e)**

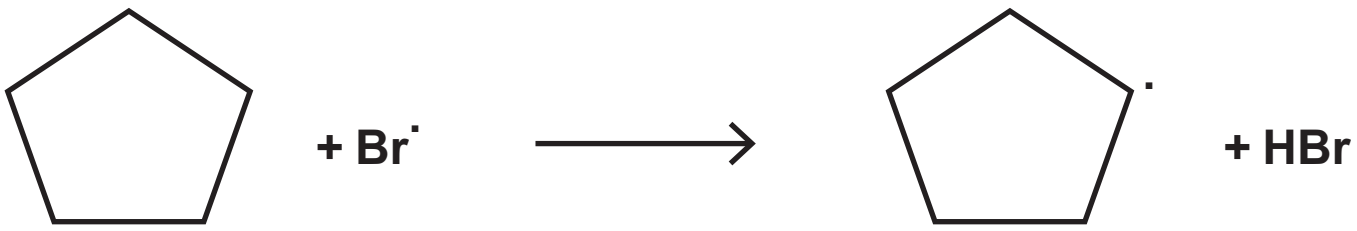
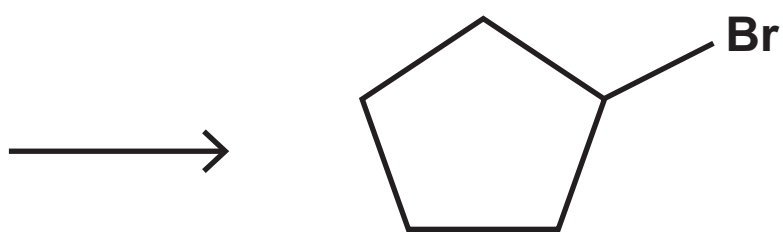

strip of filter paper soaked in a buffer solution of pH = 9
positive electrode
concentrated spot of amino acid mixture containing amino acid Z
negative electrode

## Question 3(a) – Blank

**Question 3(e)**

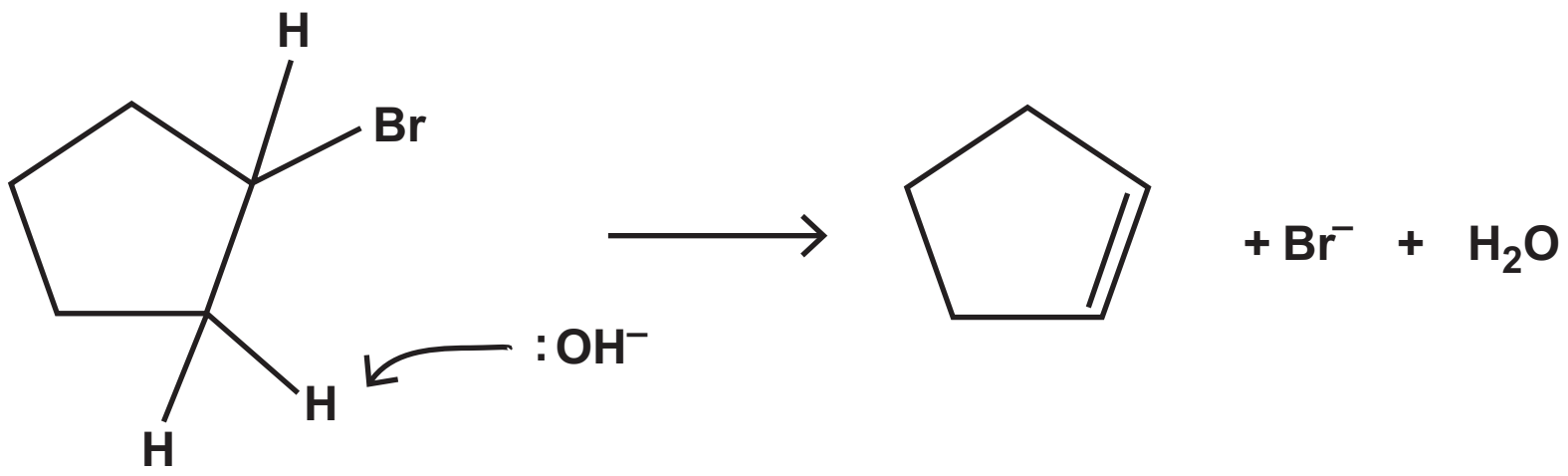


**Question 5(c)(ii)**

| Step | Equation(s) |
|---|---|
| Initiation | |
| Propagation | 1.  <br>2. |
| Termination |   |

## Question 5(c)(iii) – Blank

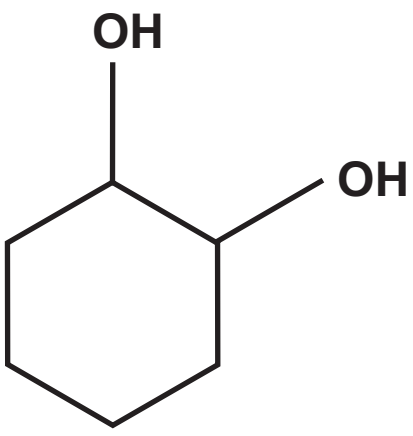
**Question 5(d)(iii)**



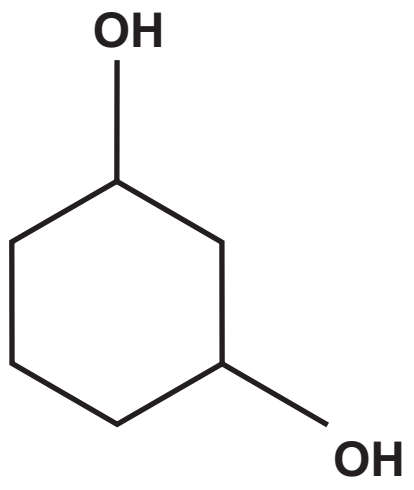
## Question 6(c)(ii) – Blank

**Question 6(d)**

**cyclohexane-1,2-diol**




**cyclohexane-1,3-diol**



## Question 7(c)(i) – Blank

## Question 7(c)(ii) – Blank

## Question 8(a)(ii) – Blank

## Question 8(b)