

Chemistry
Advanced
PAPER 3: General and Practical Principles in Chemistry

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.

Contents

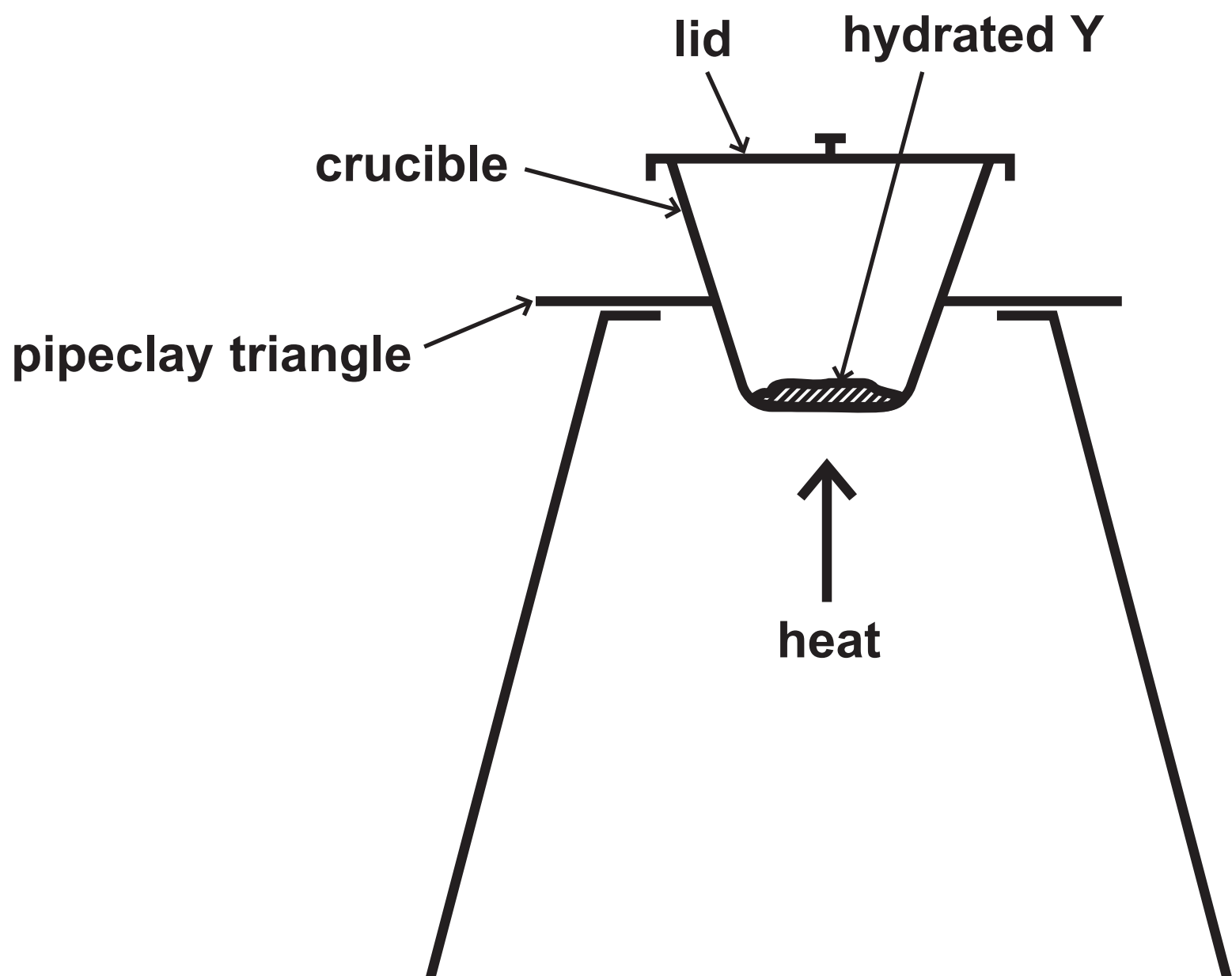
Page

4	Question 1(b)
5	Question 3(c)
6	Question 4
7	Question 6(b)
8	Question 6(b)
9	Question 6(b) (Spare copy)
10	Question 7(a)
11	Question 7(a)(ii)
12	Question 7(a)(ii) (Spare copy)
13	Question 7(a)(iii)
14	Question 7(a)(iii) (Spare copy)
15	Question 7(b)
16	Question 7(b) (Spare copy)
17	Question 9(b)
18	Question 9(c)
19	Question 10
20	Question 10(b)(i)
21	Question 10(b)(i) (Spare copy)
22–23	Question 10(c)

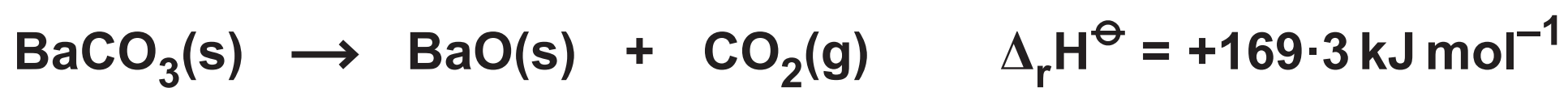
Question 1(b)

Isotope	Percentage abundance
^{20}Ne	84.80
^{21}Ne	2.26
^{22}Ne	12.94

Question 3(c)



Question 4

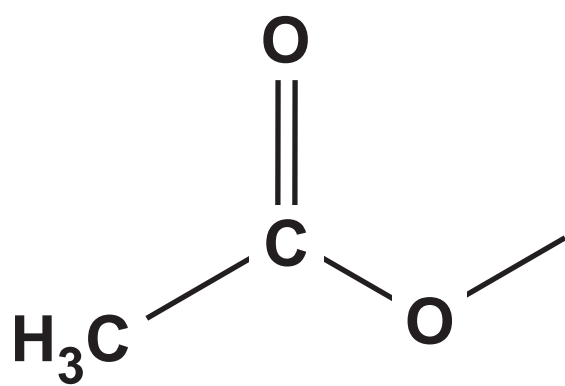


Substance	Standard molar entropy, $S^\ominus / \text{J K}^{-1} \text{mol}^{-1}$
$\text{BaCO}_3(\text{s})$	112.1
$\text{BaO}(\text{s})$	70.4
$\text{CO}_2(\text{g})$	213.6

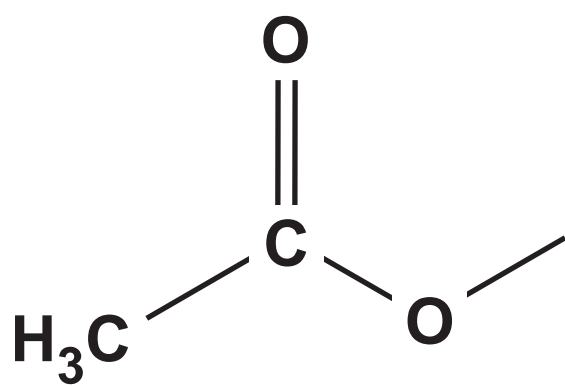
Question 6(b)

Chemical shift (δ) / ppm	Splitting pattern of peak	Relative peak area
2.50	singlet	3
1.56	quartet	4
1.43	singlet	3
0.92	triplet	6

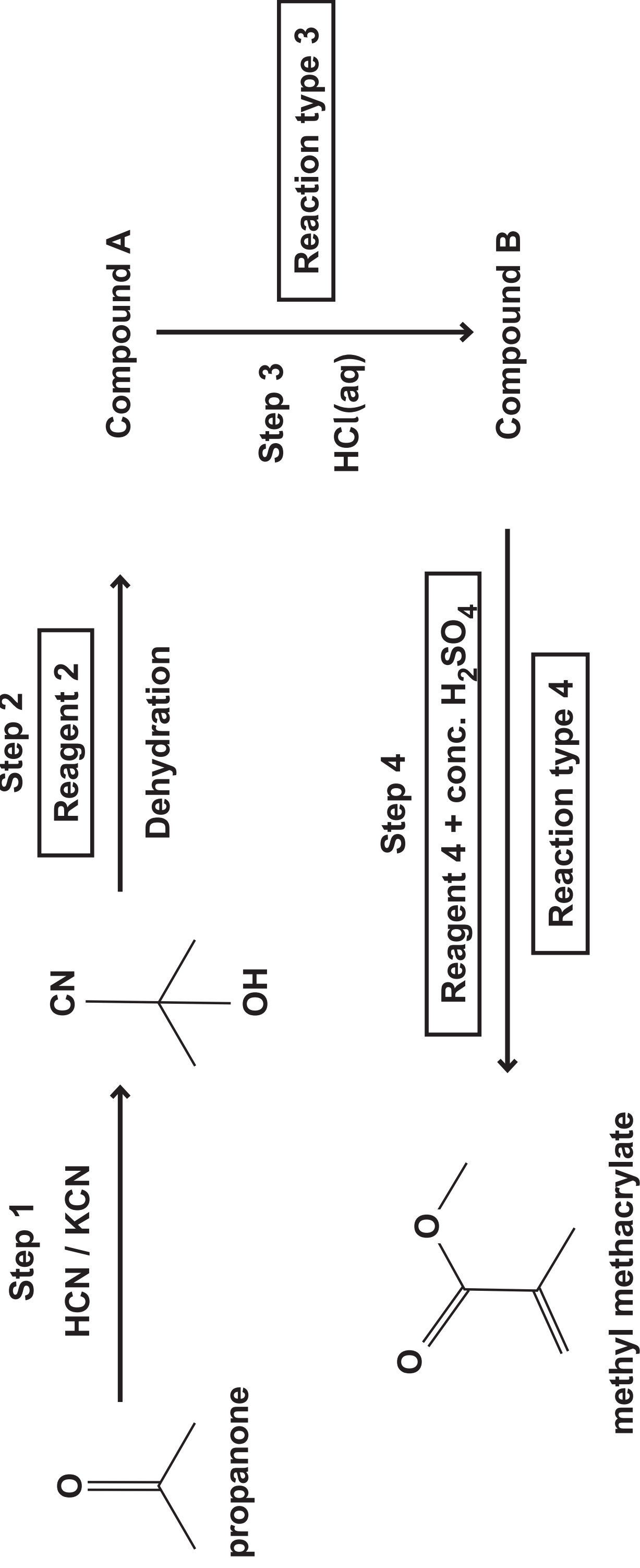
Question 6(b)



Question 6(b)



Question 7(a)



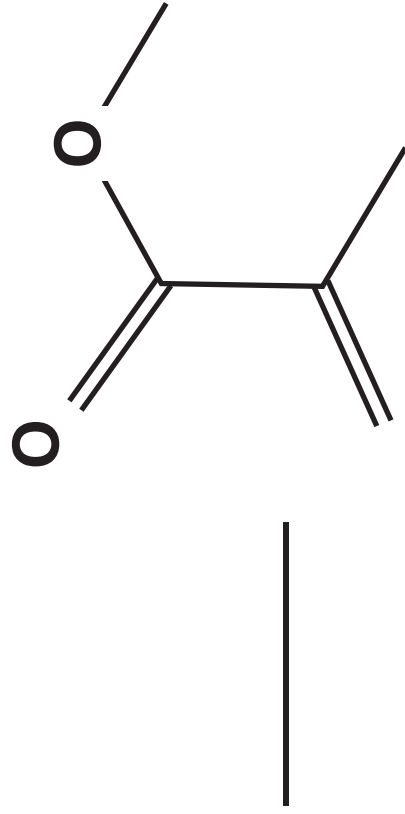
Question 7(a)(ii)

Reagent 2	
Structure of compound A	
Reaction type 3	
Structure of compound B	
Reagent 4	
Reaction type 4	

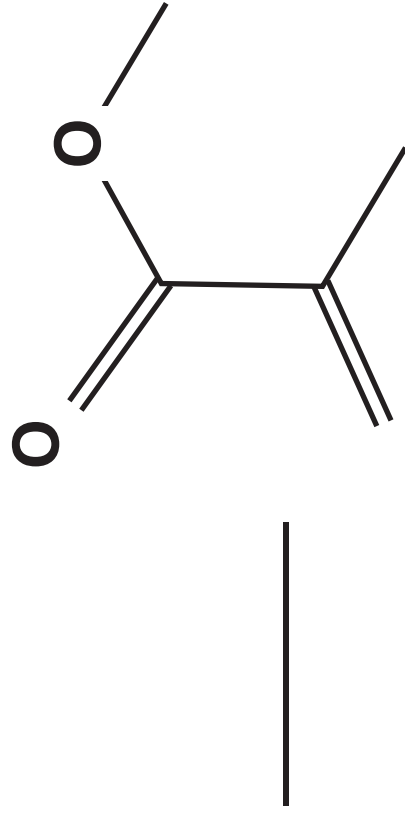
Question 7(a)(ii)

Reagent 2	
Structure of compound A	
Reaction type 3	
Structure of compound B	
Reagent 4	
Reaction type 4	

Question 7(a)(iii)



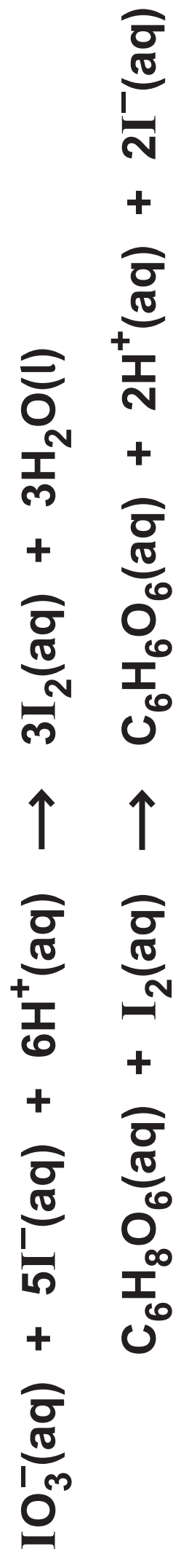
Question 7(a)(iii)



Question 7(b)

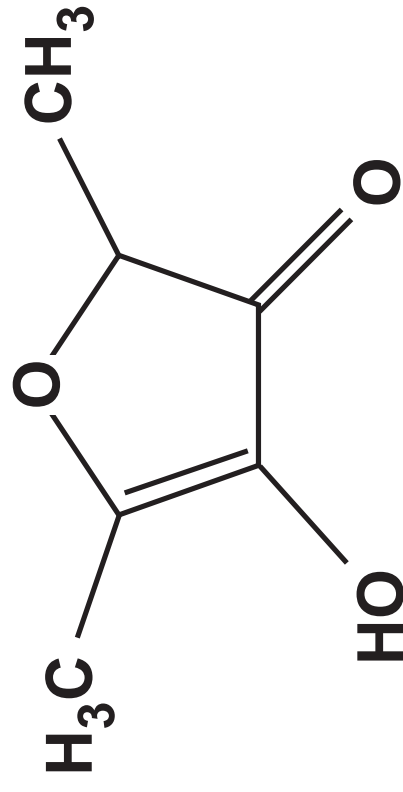
Question 7(b)

Question 9(b)

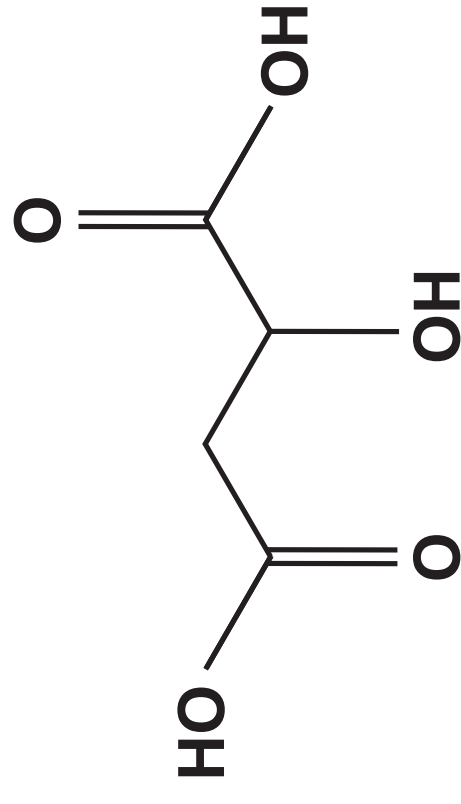


Question 9(c)

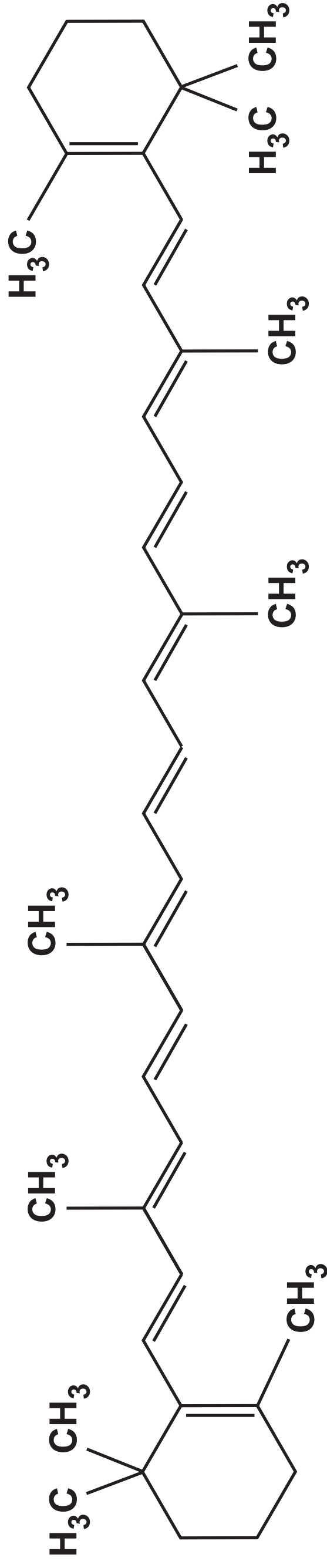
Compound D



Compound E



Compound F



Question 10

Procedure

- Step 1** Mix 25 cm^3 of 1 mol dm^{-3} aqueous propanone with 25 cm^3 of 1 mol dm^{-3} sulfuric acid in a beaker. Both these reactants are in excess.
- Step 2** Start the stop clock as 50 cm^3 of 0.02 mol dm^{-3} iodine solution is added to the beaker. Mix the reactants thoroughly.
- Step 3** Withdraw a 10.0 cm^3 sample of the reaction mixture, using a pipette, and transfer it to a conical flask.
- Step 4** Add a spatula measure of sodium hydrogencarbonate, noting the exact time.
- Step 5** Titrate the iodine present in the 10.0 cm^3 sample with 0.01 mol dm^{-3} sodium thiosulfate solution, using starch indicator.
- Step 6** Continue to withdraw 10.0 cm^3 samples about every two minutes, repeating Steps 4 and 5 with each sample.

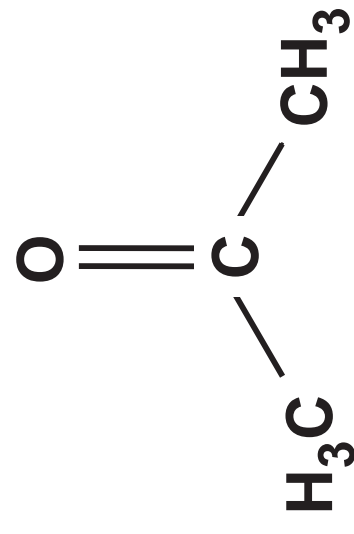
Question 10(b)(i)

[illegible]

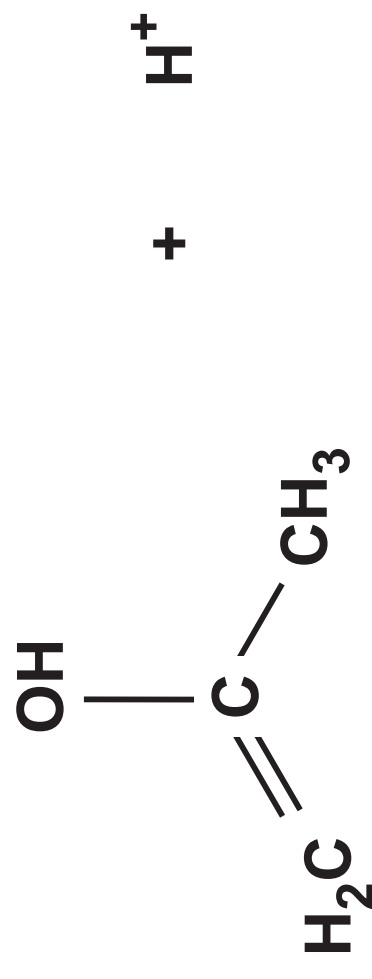
Question 10(b)(i)

[illegible]

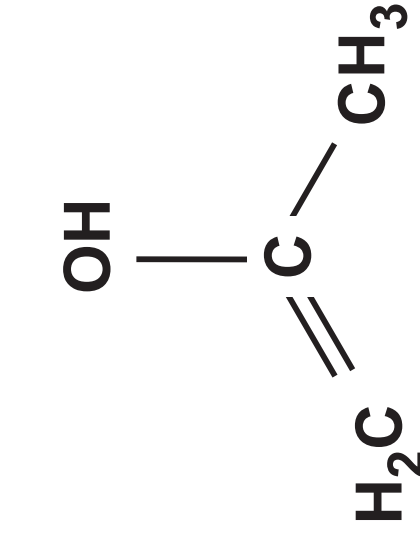
Question 10(c)



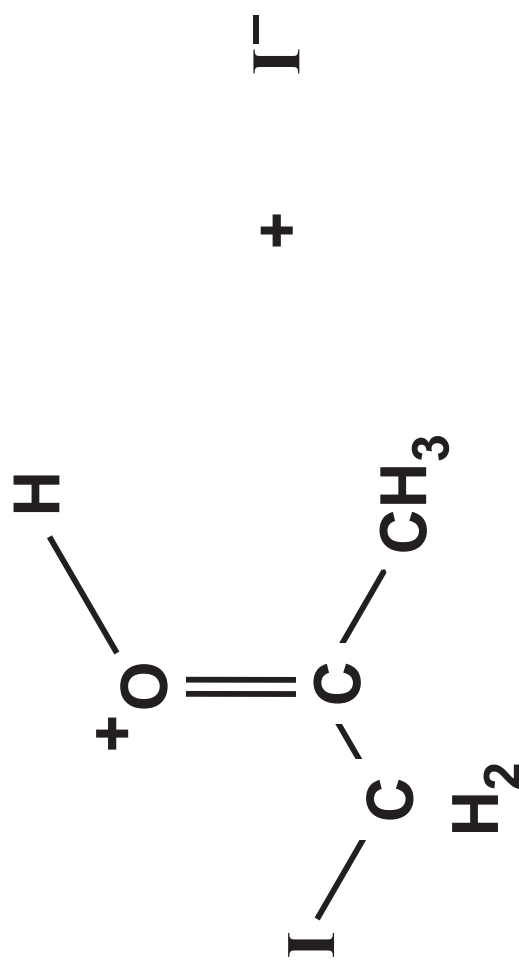
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Step 1



+



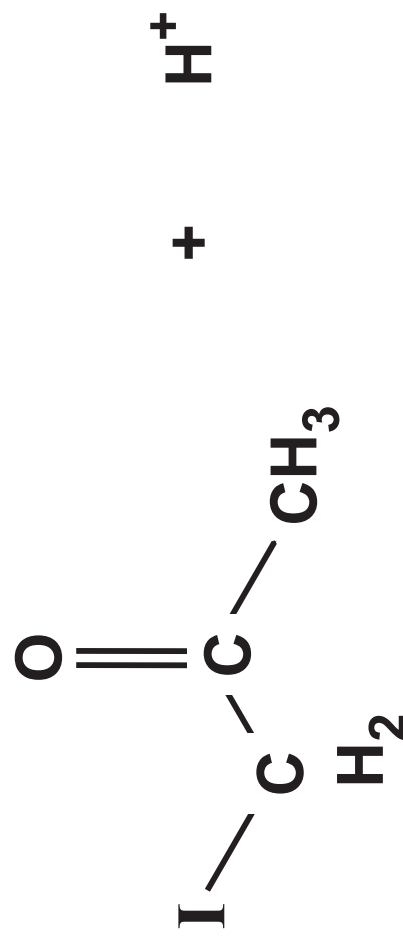
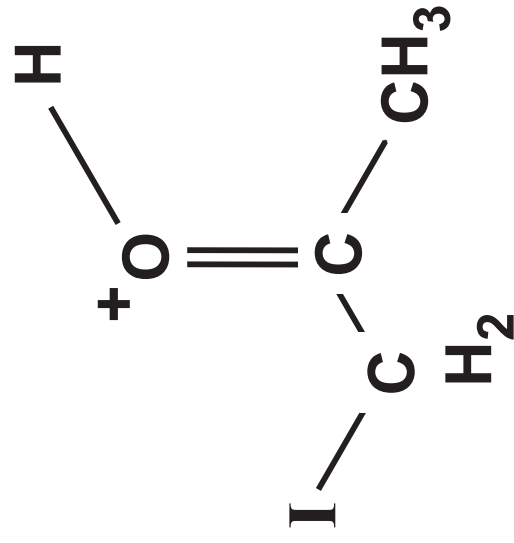
Step 2

(continued on the next page)

Turn over

Question 10(c) continued.

Step 3



Overall reaction

