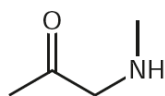
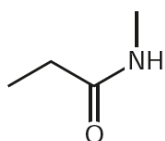


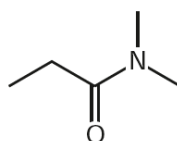
1. Which molecule is a secondary amine?



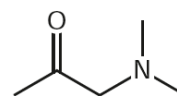
A



B



C



D

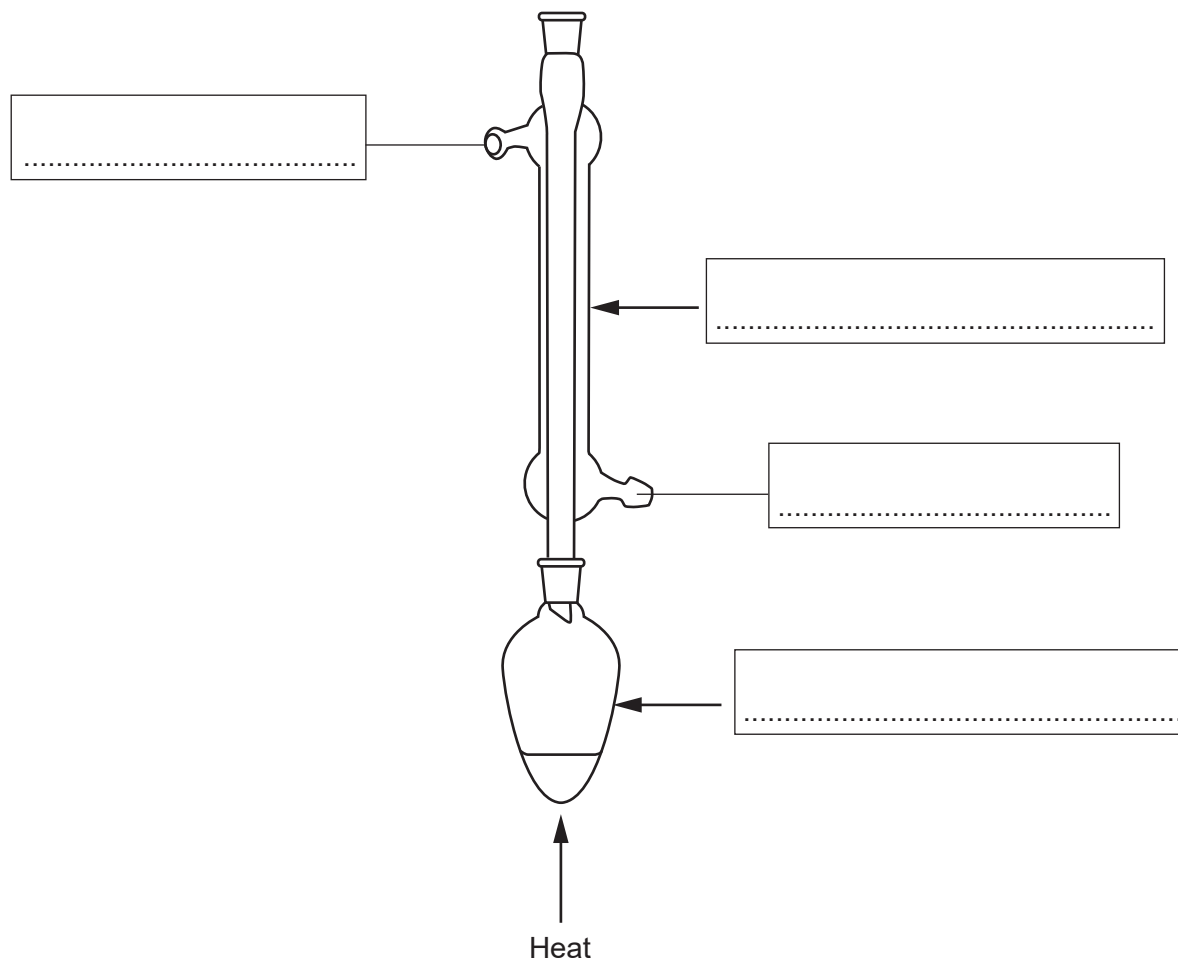
Your answer

[1]

2. This question is about organic chemistry.

(a) This part is about two practical techniques used in organic preparations.

(i) Complete the missing labels on the diagram and name the technique.



Name of technique: [2]

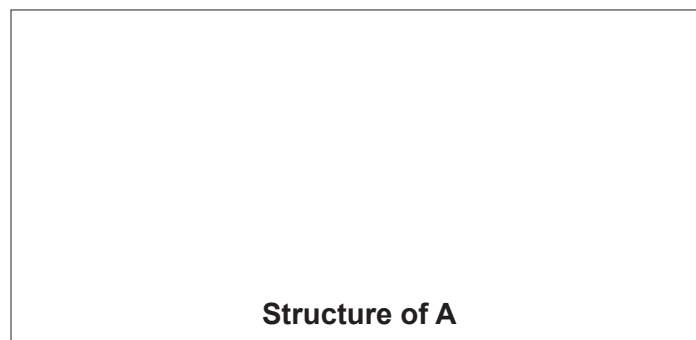
(ii) Draw a labelled diagram to show apparatus set up for filtration under reduced pressure (vacuum filtration).

(ii) Amine **A** is a liquid at room temperature and pressure.

When vaporised, 0.202 g of the amine produces 72.0 cm³ of gas at 1.00×10^5 Pa and 100 °C. The ¹³C NMR spectrum of amine **A** has 3 peaks.

Determine the molecular formula of **A** and suggest a possible structure for amine **A**.

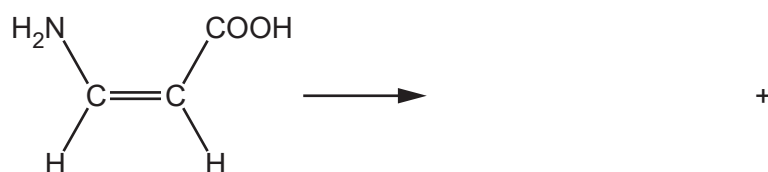
Molecular formula of **A**



[6]

(c) The amino acid Z-H₂NCH=CHCOOH can react to form a cyclic compound with the molecular formula C₃H₃NO and one other product.

Complete the equation for this reaction.



[2]