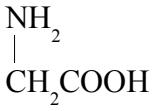
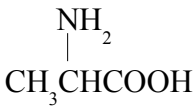
AMINO ACIDS: INTRODUCTION

1. The diagram shows the two simplest 2-amino acids. In each case, give their systematic chemical name, and their common name in biology or biochemistry.



A



B

2. Amino acids exist in the solids as *zwitterions*. Answer the following questions using a general amino acid with the structure

a) Explain what is meant by a zwitterion, and how the amino acids form zwitterions.

b) Why does the presence of zwitterions in the solid lead to high melting points for the size of the molecules?

c) Why does the presence of zwitterions help the solubility of the amino acids in water?

d) Why does the presence of zwitterions make the amino acids insoluble in organic solvents?

3. a) Considering the general structure drawn in Q2, explain why 2-amino acids apart from the case where R = H have optical isomers.

b) Draw the structures of the optical isomers for molecule B in Q1.

c) Suggest why naturally occurring amino acids always consist of just one of the possible optical isomers.