AQA – Nuclear Magnetic resonance spectroscopy – A2 Chemistry P3

1. June/2021/Paper_3/No.2

0 2 The protein fibroin can be broken down into amino acids using an enzyme.

0 2 . 1 A student uses thin-layer chromatography (TLC) to identify these amino acids.

The student identifies two of the amino acids as alanine and serine.

Use **Figure 3** to calculate the R_f value of the unknown amino acid.
Show your working.

Use your R_f value and **Table 1** to identify the unknown amino acid.

[2 marks]

Figure 3

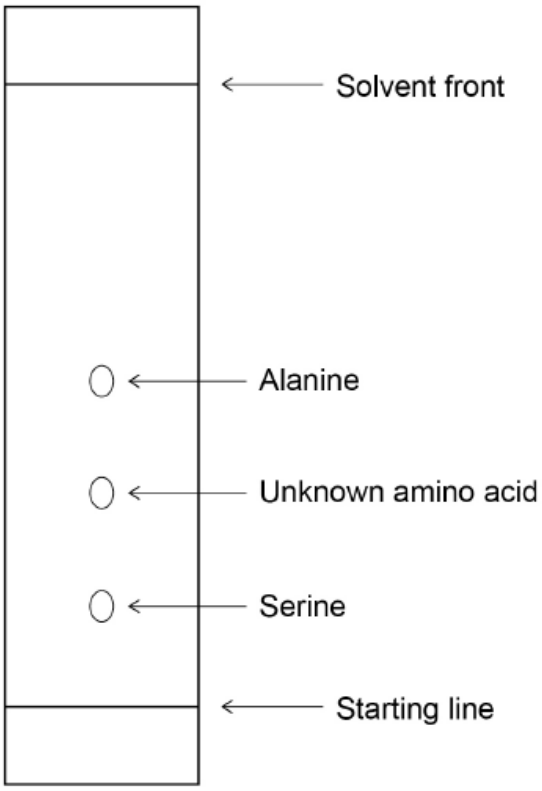


Table 1

Amino acid	R_f value
tyrosine	0.25
glycine	0.34
valine	0.64
leucine	0.73

R_f value _____

Identity _____

0 2 . 2 The amino acids cannot be seen as they move during the experiment.

State how the amino acids can be made visible at the end of the experiment.

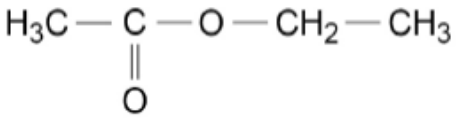
[1 mark]

0 2 . 3 State why each amino acid has a different R_f value.

[1 mark]

2. June/2021/Paper_3/No.11

Which statement does **not** support the suggestion that an unknown organic compound is



[1 mark]

A Its ^1H NMR spectrum has 3 peaks with an integration ratio of 2:3:3 ⬭

B Its ^{13}C NMR spectrum has 3 peaks. ⬭

C Its infrared spectrum has an absorption at 1735 cm^{-1} ⬭

D It has 36.36% by mass of oxygen and 9.09% by mass of hydrogen. ⬭