Question - 01

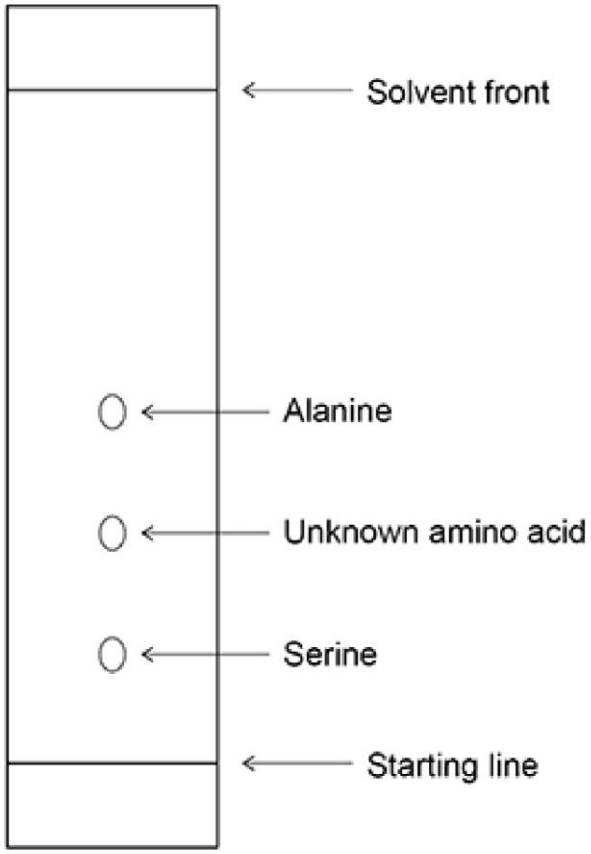
The protein fibroin can be broken down into amino acids using an enzyme.

(a) 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 the figure below to calculate the R_f value of the unknown amino acid. Show your working.

Use your R_f value and the table below to identify the unknown amino acid.



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

Rf value _____

Identity _____

(2)

(b) 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)

(c) State why each amino acid has a different R_f value.

_____

_____

_____

(1)

(a) **M1** $\frac{27}{80} = 0.34$

1

M2 glycine

M1 *some relevant working is needed to arrive at 0.325 - 0.35*
no ECF based on ***M1***

1

(b) use uv lamp or ninhydrin

allow *developing / locating agent / iodine*

1

(c) each amino acid has different (relative) affinity/attraction to/solubility in stationary and mobile phases

allow *reference to different solubility in solvent OR different affinity for stationary phase*

1