

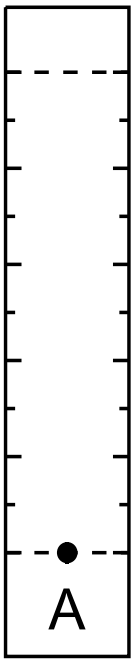
Q1. [7.15 points] Draw a sketch of the spots observed on your TLC plate, and complete the table in your answer sheet with R_f values and proposed pigments (Roman numeral from Table 1, one per spot):

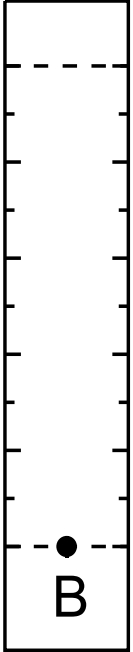
[1.75 points – awarded in a deductive manner – loss of points for omissions] Each lane corresponds to the original – check photograph for comparison and check if any obvious spots are omitted.

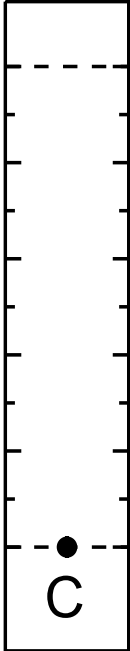
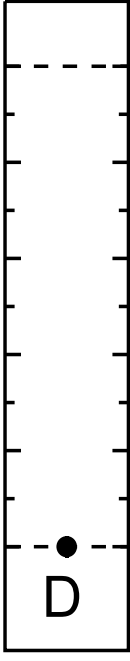
[1.9 points (0.1 x 19)] for the drawing. Minimum 7 for lane A (& 1 weak), min. 5 for B, min. 6 for lane C (& some weak), max. 1 for lane D (lose points for additional spots – carry over)

[2.0 points, 0.25per R_f (0.25x8)] Points for the calculation of R_f .(margin of error? Invigilators will prepare and run plate in their rooms and take photo for comparison and to decide R_f for grading)

[1.5 points, 0.25 per pigment (0.25x6)] Suggested pigments – minimum of six correct. If the same pigment is present in A,B&C but not identified in one, deduct one third of marks (0.08), if present in two lanes and only identified once, deduct 50% of marks (i.e. 0.125)

	<i>Spot no. (e.g. A1)</i>	<i>Calculations</i>	<i>R_f</i>	<i>Suggested pigment, if any</i>
				

 <p>A vertical ruler with a scale. The scale has 10 major tick marks and 100 minor tick marks. A dashed horizontal line is drawn across the ruler at the 10th major tick mark from the top. A solid black dot is placed on this dashed line, and the letter 'B' is printed below it.</p>				
---	--	--	--	--

	Spot no. (e.g. A1)	Calculations	<i>R_f</i>	Suggested pigment, if any
				
				

Q2 [1.0 points, 0.25 per statement]

For the following observations about the sample in lane D, mark in your answer sheet whether the following statements are true or false [X points].

Statement	True	False
It separated into distinct pigments, which are not present in other lanes.		X
It separated into distinct pigments, which are also present in other lanes.		X
It did not move with mobile phase.	X	
It does not contain any pigments		X

Q3 For the following statements, mark in your answer sheet whether the following statements are true or false [1.0 points, 0.25 per statement]

The TLC chamber (bottle) is closed to...

Statement	True	False
To prevent evaporation of the mobile phase.	X	
To avoid the smell of the chemicals contained in the mobile phase.	X	
To maintain a dust-free environment.	X	
To decrease the pressure in the chamber		X

Q4. Indicate in your answer sheet, whether each of the factors below affect the R_f value of a compound [1.75 points, 0.25 per statement]

	Affects R_f	Does not affect R_f
A. Polarity of compound	X	
B. Distance travelled by solvent (mobile phase)		X
C. Size of TLC plate		X
D. Type of stationary phase	X	
E. Amount of sample loaded		X
F. Size of chamber		X
G. Color of the sample		X

Q5. Write the letter that corresponds to the pigment that moves slowest up the TLC plate in the box on your answer sheet. [0.25 points]

- A. Chlorophyll *a*
- B. Xanthophyll 1
- C. Pheophytin
- D. Chlorophyll *b*

Q6 [1.0 points, 0.25 per statement] For the following statements, mark in your answer sheet whether the statements are correct or incorrect.

A compound moves slower than others up a TLC plate in our experimental conditions because...

Statement	Correct	Incorrect
It is less polar than the other compounds		X
It is a more hydrophilic compound	X	
It has a larger molecular weight		X
It is more concentrated than the other compounds		X

Q7. Will the R_f values change if the ratio of polar and non-polar solvents in the mobile phase is changed? Write the letter that corresponds to your answer in the box on your answer sheet. [0.25 points]

- A. Yes
- B. No

Q8. What could potentially limit the effectiveness of the chromatographic technique you have used? [1.0 points, 0.25 per statement]

Statement	Correct	Incorrect
Leaving the TLC chamber open	X	
The amount of mobile phase in the TLC chamber	X	
Geographical location where the experiment is performed		X
Running multiple plates in one TLC chamber		X