

ACTIVITY 5b – AO3 in Exams – Student Answers

Paper 1C, Q4(a)

Student 1

1. The starting level of the four different inks/dots is below the water meaning the ink will not rise. To be done correctly they should be 1-2cm above the waterline.
2. The student has drawn the baseline in ink meaning that it will mix with and contaminate the inks that they want to use (A, B, C, D). This line should be drawn in pencil.

Student 2

1. The student uses ink as the baseline. This is wrong as the ink could smear the ~~chromatography~~ chromatography paper which could make the test invalid.
2. The student submerges the four inks into the water. This will ruin the test as the inks will not travel up the paper properly. The student should have put the baseline and inks just above the water line.

Student 3

1. The baseline should not be drawn in ink it should be drawn in pencil as it will interfere with the results.
2. There should be a cover on top of the apparatus.

Paper 2C, Q3(c)

Student 1 (c)(i)

(c) The table shows the results of experiments done by four students, A, B, C and D.

Alcohol	Formula of alcohol	Time taken for liquid to evaporate in s				
		Student A	Student B	Student C	Student D	Mean time in s
methanol	CH ₃ OH	20	24	22	26	23
ethanol	C ₂ H ₅ OH	32	34	35	30	33
propanol	C ₃ H ₇ OH	45	47	50	48	48
butanol	C ₄ H ₉ OH	64	63	90	60	

(i) Calculate the mean (average) time for butanol to evaporate.

$$\frac{64 + 63 + 90 + 60}{4} = 69.25$$

mean time = 69.25 s

Handwritten notes: 63+64+60 = 62.3, 3 (2), without anomaly

Student 2 (c)(i)

(c) The table shows the results of experiments done by four students, A, B, C and D.

Alcohol	Formula of alcohol	Time taken for liquid to evaporate in s				
		Student A	Student B	Student C	Student D	Mean time in s
methanol	CH ₃ OH	20	24	22	26	23
ethanol	C ₂ H ₅ OH	32	34	35	30	33
propanol	C ₃ H ₇ OH	45	47	50	48	48
butanol	C ₄ H ₉ OH	64	63	90	60	

(i) Calculate the mean (average) time for butanol to evaporate.

(2)

mean time = 62 s

Student 3 (c)(i)

(c) The table shows the results of experiments done by four students, A, B, C and D.

Alcohol	Formula of alcohol	Time taken for liquid to evaporate in s				
		Student A	Student B	Student C	Student D	Mean time in s
methanol	CH ₃ OH	20	24	22	26	23
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(i) Calculate the mean (average) time for butanol to evaporate.

(2)

$$\frac{64 + 63 + 90 + 60}{4} = 69.25$$

mean time = 62.3 s

Handwritten notes: 64 + 63 + 60 = 62.3, 3, Remove the anomaly

Student 1 (c)(ii)

Methanol evaporates most easily because it's mean time taken to evaporate is the ~~smallest~~ lowest out of all the alcohols.

Student 2 (c)(ii)

The results show that methanol evaporates most easily.

Student 3 (c)(ii)

The results show that Methanol evaporates the easiest because it takes less time on average to evaporate compared to Butanol which takes the longest.

Student 1 (c)(iii)

The fewer carbon atoms, the quicker the reaction. More carbon atoms makes evaporation slower.

Student 2 (c)(iii)

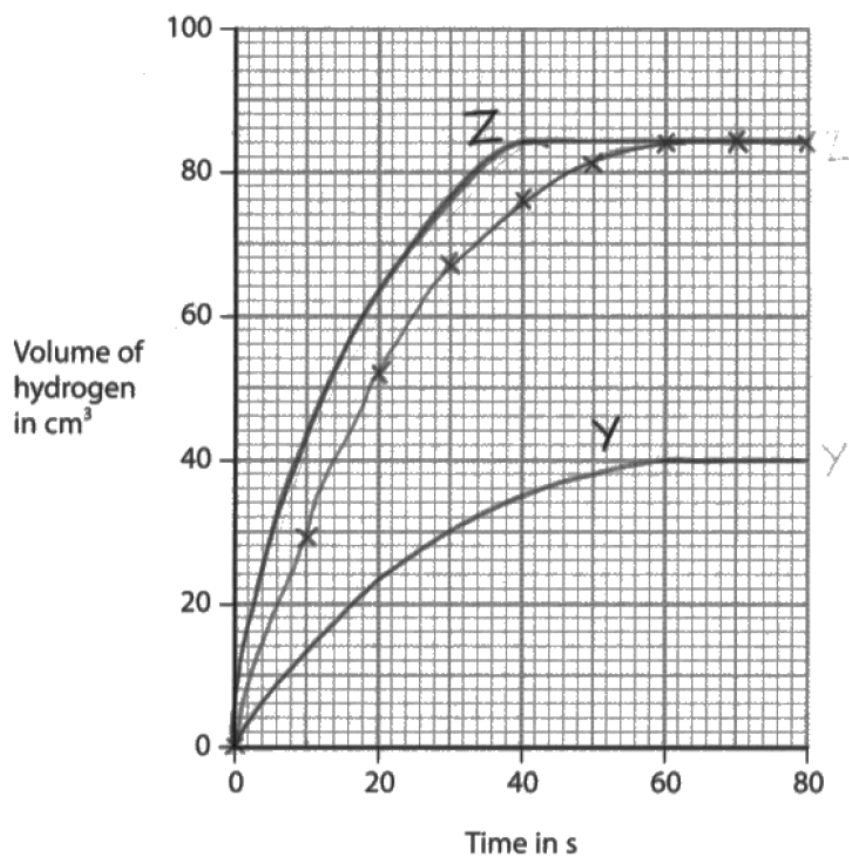
The more carbon atoms in a molecule, the longer it takes for the alcohol to evaporate ~~At least~~.
A less number of carbon atoms, the ~~at~~ alcohol evaporates more easily.

Student 3 (c)(iii)

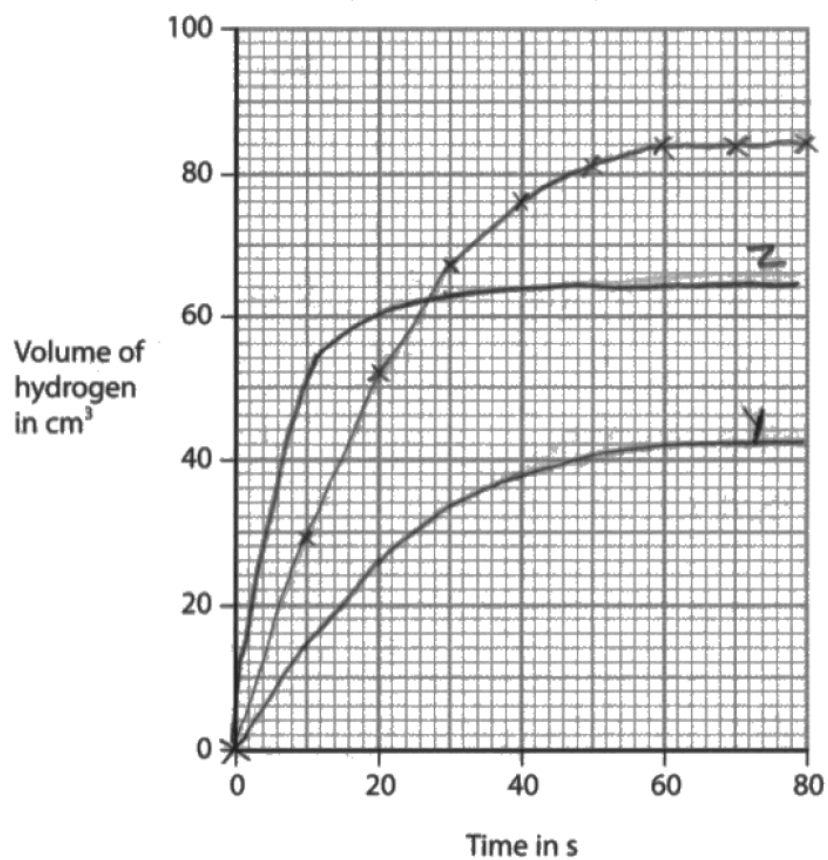
The greater the number of carbon atoms in the molecule, the longer the alcohol takes to ~~evaporate~~ evaporate and so the less easily it evaporates. For example, methanol (which only has one carbon atom) takes an average of 23 seconds to evaporate compared (Total for Question 3 = 9 marks) to propanol (which has three carbon atoms) which takes an average of 48 seconds to completely evaporate.

Paper 1C, Q12(a) & (b)

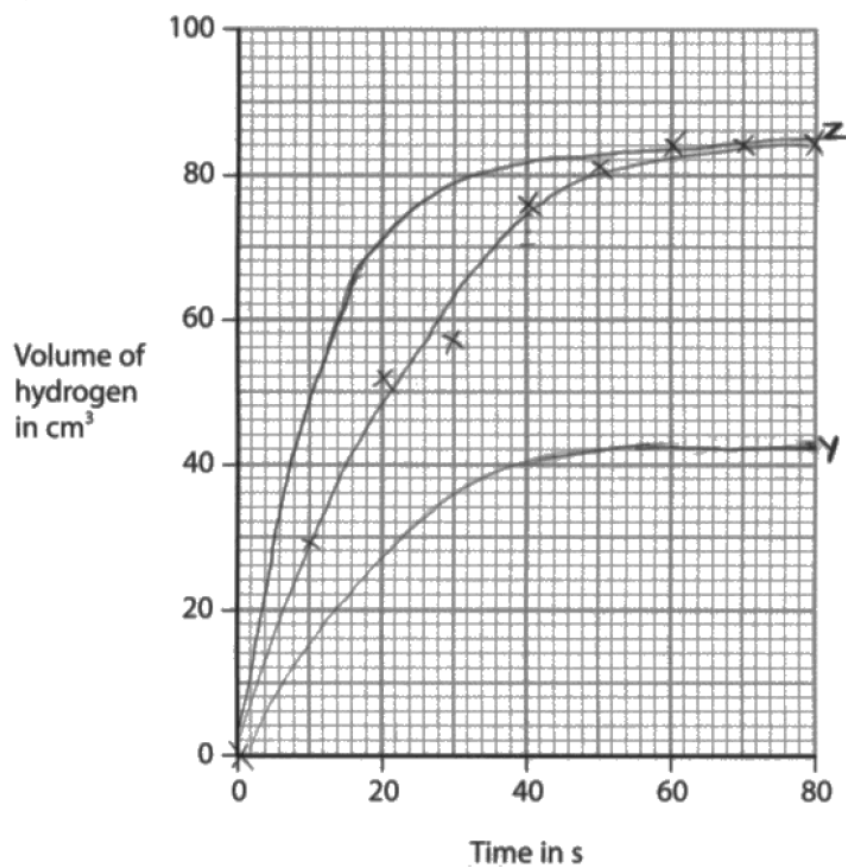
Student 1



Student 2



Student 3



Student 4

