

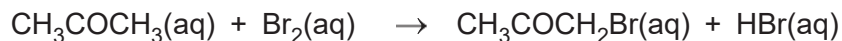
**A level Chemistry A**

**H432/01** Periodic table, elements and physical chemistry

**Question Set 20**

1.\*

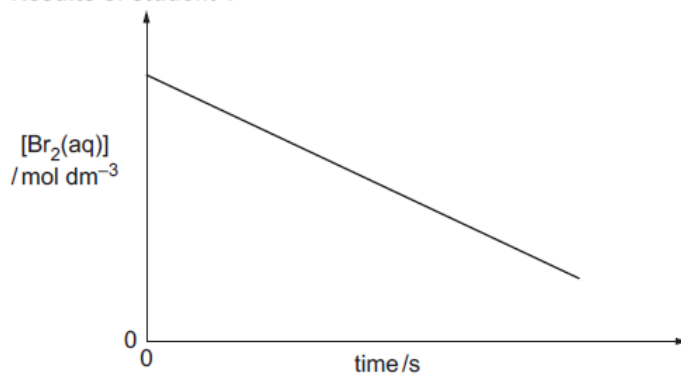
Three students carry out a rates investigation on the reaction between bromine and propanone in the presence of hydrochloric acid.



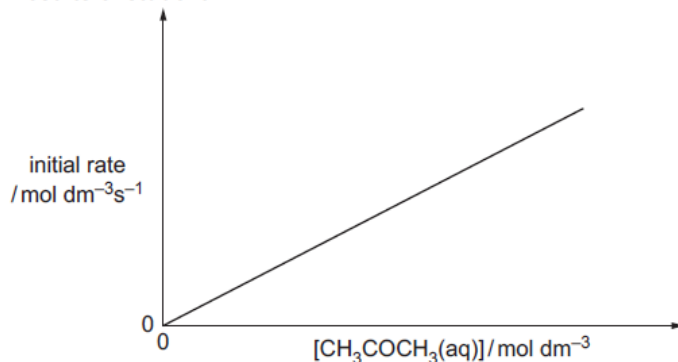
Each student investigates the effect of changing the concentration of one of the reactants whilst keeping the other concentrations constant.

Their results are shown below.

Results of student 1



Results of student 2



Explain how the reaction orders can be determined from the students' results, and determine the rate equation and rate constant.

Results of student 3

Experiment	$[\text{Br}_2(\text{aq})] / \text{mol dm}^{-3}$	$[\text{CH}_3\text{COCH}_3(\text{aq})] / \text{mol dm}^{-3}$	$[\text{H}^+(\text{aq})] / \text{mol dm}^{-3}$	Initial rate / $10^{-5} \text{mol dm}^{-3} \text{s}^{-1}$
1	0.004	1.60	0.20	1.25
2	0.004	1.60	0.40	2.50

[6]

**Total Marks for Question Set 20: 6**

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