Oxford Cambridge and RSA

A level Chemistry A

H432/01 Periodic table, elements and physical chemistry

Question Set 20

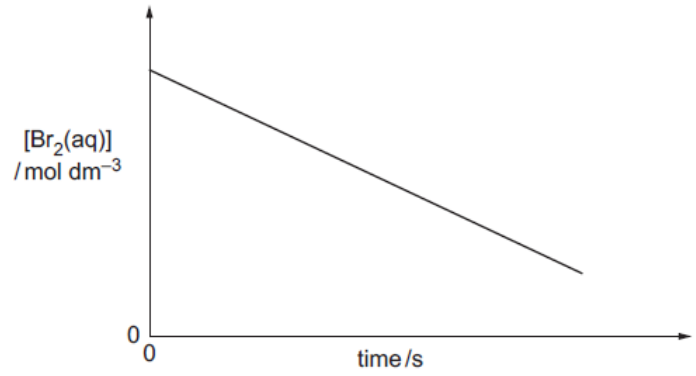
1.* Three students carry out a rates investigation on the reaction between bromine and propanone in the presence of hydrochloric acid.

$$CH_3COCH_3(aq) + Br_2(aq) \rightarrow CH_3COCH_2Br(aq) + HBr(aq)$$

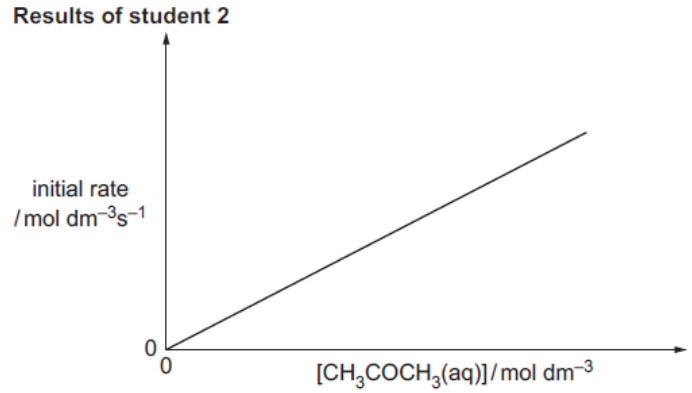
Each student investigates the effect of changing the concentration of one of the reactants whilstkeeping the other concentrations constant.

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 therate equation and rate constant.

Results of student 3

Experiment	$[Br_2(aq)]$ /mol dm^{-3}	$[CH_3COCH_3(aq)]$ /mol dm^{-3}	$[H^+(aq)]$ /mol dm^{-3}	Initial rate /10^{-5} mol dm^{-3} 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