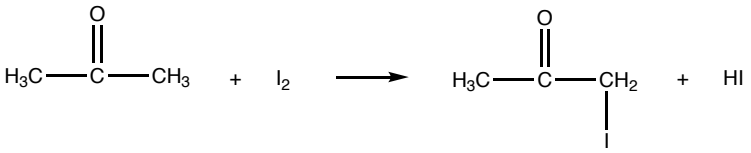
RATES OF REACTION (C)

Propanone reacts with iodine in the presence of an acid catalyst.

A series of experiments were carried out to determine the rate equation.



$[CH_3COCH_3]$ (mol dm^{-3})	$[I_2]$ (mol dm^{-3})	$[H^+]$ (mol dm^{-3})	rate (mol dm^{-3} s^{-1})
2.00	0.00126	0.248	5.60×10^{-6}
4.00	0.00126	0.248	1.12×10^{-5}
2.00	0.00252	0.248	5.60×10^{-6}
2.00	0.00504	0.496	1.12×10^{-5}

a What is the order of reaction with respect to? $[CH_3COCH_3]$ ..... $[I_2]$ ..... $[H^+]$ .....

b What is the rate equation? .....

c Calculate the rate constant, including units. .....

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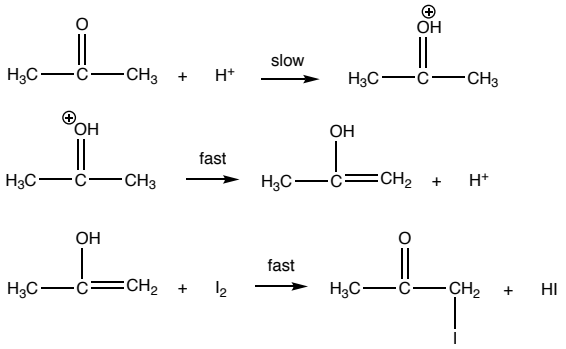
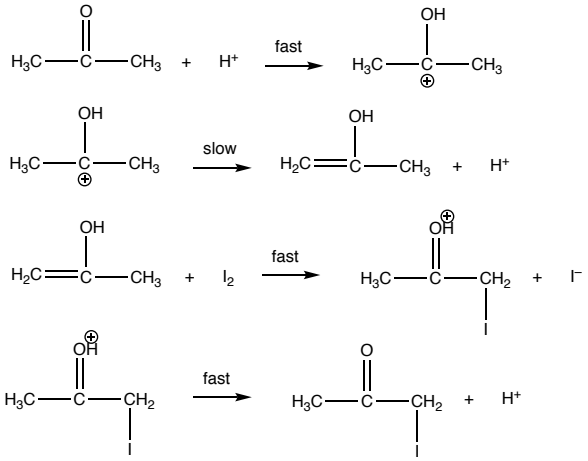
d Two proposed mechanisms for this reaction are shown. Which of these mechanisms, if any, is feasible for this rate equation.

Mechanism 1 .....

Mechanism 2 .....

Mechanism 1



Mechanism 2