

Answers to the Practice FRQ:

Practice FRQ

a) Expt $\frac{2}{1}$ $[I^-]$ $\frac{.052}{.017}$ $[CeO^-]$ same Rate $\frac{.474}{.156}$ order = 1
 i) $[I^-]$ "x3" "x3"

ii) CeO^-
 Expt $\frac{3}{1}$ $[I^-]$ $\frac{.052}{.017}$ $[CeO^-]$ 4x Rate $\frac{.594}{.154}$ order = 1

b) (i) Rate = k $[I^-][CeO^-]$

(ii) $k = \frac{\text{Rate}}{[I^-][CeO^-]} = \frac{.156 \text{ M} \cdot \text{s}^{-1}}{(.017)(.015) \text{ M}^2} = \boxed{611.7 \text{ M}^{-1} \cdot \text{s}^{-1}}$
 $= \boxed{610 \text{ L} \cdot \text{mol}^{-1} \cdot \text{s}^{-1}}$

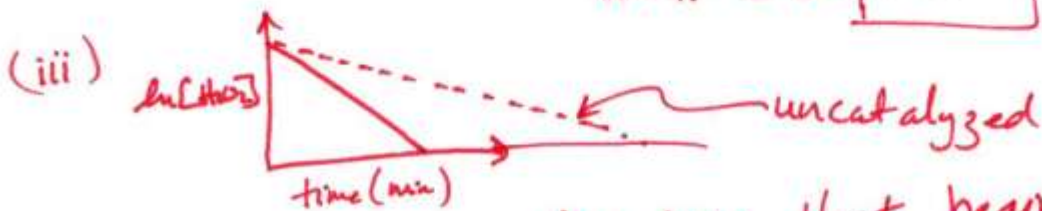
c) First order is a straight line if $y = \ln [H_2O_2]$

(i) $\ln [H_2O_2]$

(ii) Rate = k $[H_2O_2]$

$k = \frac{\text{Rate}}{[H_2O_2]} = \frac{\text{mol} \cdot \text{L}^{-1} \cdot \text{s}^{-1}}{\text{mol} \cdot \text{L}^{-1}} \text{ min}^{-1}$

units = $\boxed{\text{min}^{-1}}$



Any line that begins at the same point and takes more time to react.