1.

(1) $k=6\times10^{-3}\,mol\cdot L^{-1}\cdot s^{-1}$

(2) $k=\frac{r}{c}=3\times10^{-2}\,s^{-1}$

2. (1) 观察第二组数据可知，对A为零级反应

(2) 观察2,3,4组数据易知 $\frac{V_4}{C_4(B)}=\frac{V_3}{C_3(B)}=\frac{V_2}{C_2(B)}$，所以对B为一级反应

(3) $V=kC(B)$

5.

(1) 设 $V=kC$

则 $-dC=Vdt=kCdt$

$-\frac{1}{C}dC=kdt$

$\int_{0.2}^{1}\frac{1}{C}dC=k\cdot 30\,min$

$\ln 5=k\cdot 30\,min$

同理：$\int_{0.04}^{0.2}\frac{1}{C}dC=\ln 5=k\cdot 30\,min$

∴需要30 min

(2). 由(1)知

$k=\frac{\ln 5}{30}\,min^{-1}$

$=2\ln 5\ s^{-1}$

8. 设 $r=kC$

$-dC=rdt=kCdt \Rightarrow -\frac{1}{C}dC=kdt$

$$\int_{c_0}^{0.1c_0} -\frac{1}{c^2} = kt$$

$\ln\frac{10}{9} = 0.46 \cdot t$

$t = 0.23h$

∴ 0.23h后可分解10%

$\frac{1}{9} = 0.46t$

$t = 2.17h$.

∴ 2.17h后可分解90%

13.

$T_1 = 430K$: $\lg k_1 = \lg A - \frac{E_a}{2.303R} \cdot \frac{1}{T_1}$

$T_2 = 500K$, $\lg k_2 = \lg A - \frac{E_a}{2.303R} \cdot \frac{1}{T_2}$

$= \lg A - \frac{E_a}{2.303R}\frac{1}{T_1} + \frac{E_a}{2.303R}\left(\frac{1}{T_1} - \frac{1}{T_2}\right)$

$= \lg k_1 + \frac{E_a}{2.303R}\left(\frac{1}{T_1} - \frac{1}{T_2}\right)$

$= \lg k_1 - 4.7459$

$K_2 = 1.8 \times 10^{-5}\ L \cdot mol^{-1} \cdot s^{-1}$