Solution for question 2-1:

$$E + S \underset{K_2}{\overset{K_1}{\rightleftharpoons}} ES \xrightarrow{K_3} E + P$$

Solution: Assume the weight of E is m_e, P is m_p

S is m_s, ES is m_{es}

So we can find four equations:

$$\begin{cases} \dfrac{\partial m_{es}}{\partial t} = K_1 - K_2 \quad ① \\ \dfrac{\partial m_s}{\partial t} = K_2 - K_1 \quad ② \\ \dfrac{\partial m_p}{\partial t} = K_3 \quad ③ \\ \dfrac{\partial m_e}{\partial t} + \dfrac{\partial m_p}{\partial t} + \dfrac{\partial m_s}{\partial t} + \dfrac{\partial m_{es}}{\partial t} = 0 \quad ④ \end{cases}$$