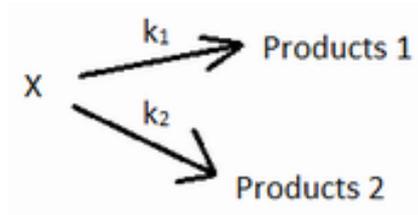


### Answer on Question #39705, Chemistry, Physical Chemistry

#### Question

A radio-element nucleus undergoes decay simultaneously in two different paths with decay constants  $0.06$  &  $0.0093 \text{ min}^{-1}$ . What is its half life?

#### Answer



$$-\frac{dN_x}{dt} = (k_1 + k_2)N_x = kN_x$$

$$\tau_{1/2} = \frac{\ln 2}{k} = \frac{\ln 2}{k_1 + k_2}$$

$$\tau_{1/2} = 0.693 / (0.06 + 0.0093) \text{ min}^{-1} = 10 \text{ min}$$

**Answer: 10 min**