

1. Technetium-99m has a decay constant of $3.2 \times 10^{-5} \text{ s}^{-1}$. What is its half-life in hours?

2. What is the activity of 99 g of Tc-99m?

3. A hospital is delivered with a sample of Tc-99m with an activity of $2.4 \times 10^{18} \text{ s}^{-1}$. What will be the activity after 2 days?

4. An ancient wooden boat is discovered. The wood has an activity of 0.0058 Bq. A modern piece of wood has an activity of 0.30 Bq. How old is the wooden boat?