

**RADIOACTIVITY**

1. During the nuclear explosion, one of the products is  $^{90}\text{Sr}$  with half life of 6.93 years. if  $1\ \mu\text{g}$  of  $^{90}\text{Sr}$  was absorbed in the bones of a newly born baby in place of Ca, how much time, in years, is required to reduce it by 90% if it is not lost metabolically\_\_\_\_\_ .

**SOLUTION**

1. NTA Ans. (23 to 23.03)

Sol. All nuclear decays follow first order kinetics

$$t = \frac{1}{k} \ln \frac{[A_0]}{[A]}$$
$$= \frac{(t_{1/2})}{0.693} \times 2.303 \log_{10} 10 = 10 \times 2.303 \times 1$$
$$= 23.03 \text{ years}$$