Suppose we consider a large number of containers each containing initially 10000 atoms of a radioactive material with a half life of 1 year. After 1 year,

(a) all the containers will have 5000 atoms of the material.
(b) all the containers will contain the same number of atoms of the material but that number will only be approximately 5000.
(c) the containers will in general have different numbers of the atoms of the material but their average will be close to 5000.
(d) none of the containers can have more than 5000 atoms.

Correct option is C)

Half life time for a radioactive substance is defined as the time in which a radioactive atomic substance remains half of its original value of radioactive atom. So, after one year means one half life ie., average atoms of radioactive substance remain after 1 year in each container is equal to 1/2 of 10000 = 5000 atoms (Average)