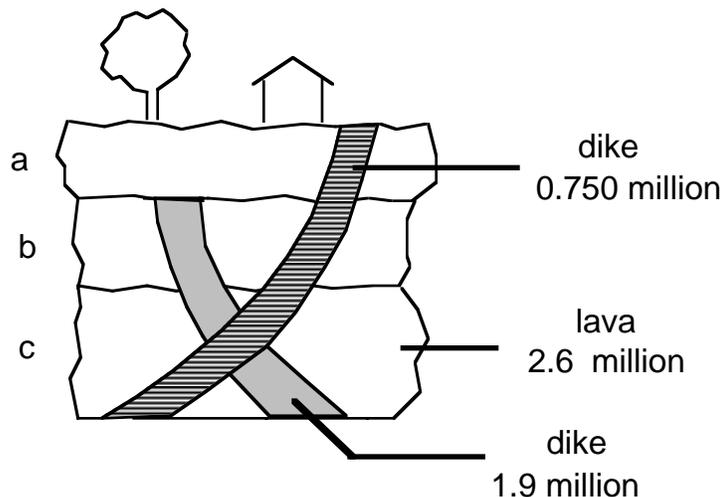


The Absolute Age of Rocks : Notes/W.S.-30

The absolute age of igneous rocks may be found by using radiometric dating methods. In this method, the amounts of radioactive elements and their decay products in an igneous rock are found. For example, uranium-235 decays into lead-207. The half-life of uranium-235 is 700 million years. This means that; if a rock had 0.64 grams of uranium-235 in it when it was formed, it will have 0.32 grams of uranium-235, 700 million years later, and 0.16 grams, 1400 years later.

Sedimentary rocks include sediments of many different ages, but the approximate age of the strata may be found by comparing the ages of dikes (igneous), volcanic ash, or lava flows, crossing it. Index fossils may also be used to help find the absolute age of sedimentary strata.

An example is shown below. The strata; a, and b, are sedimentary rocks. The two dikes and the lava flow c, are igneous. Find the age range for the sedimentary strata, a, and b.



Stratum a has an age in the range 0.75 - 1.9 million years

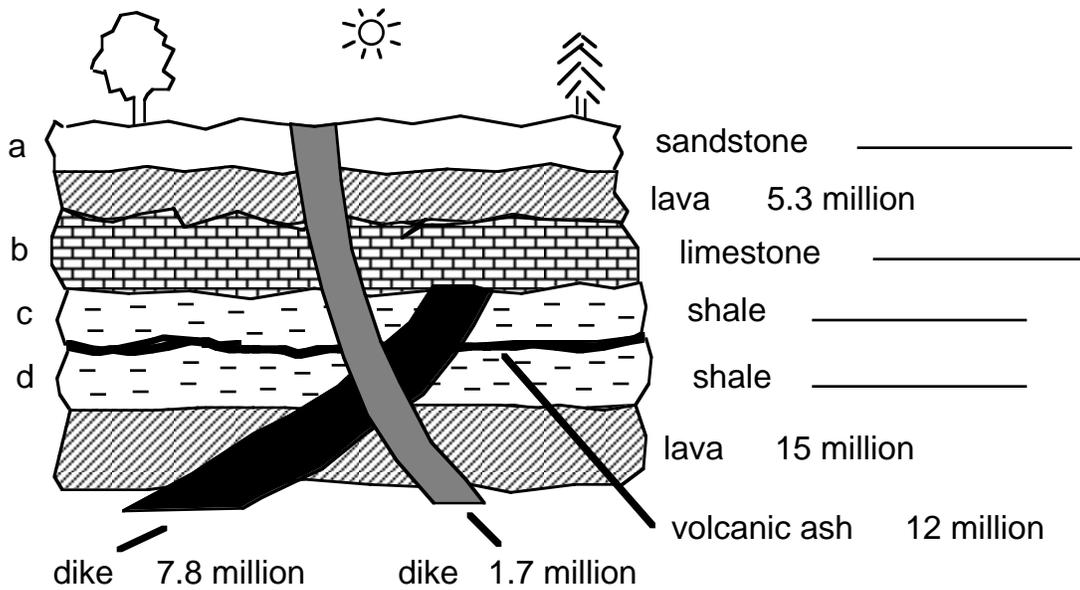
Stratum b has an age in the range 1.9 - 2.6 million years

Answer the following questions:

1)a) Suppose that you have found an igneous rock with 0.80 grams of uranium-235. If it originally had 1.6 grams of uranium-235 when it solidified, what is the present age of the rock?

b) An igneous rock has 1.6 grams of uranium-235. How much uranium-235 will be left in the rock after 1400 million years.

2) Find the age range (in millions of years) of the sedimentary strata; a, b, c, and d, in the diagram below. The ages of the igneous rocks in millions of years is given.



Answers: 1)a) 700 million years, b) 0.4 grams, 2) a) 1.7-5.3, b) 5.3-7.8, c) 7.8-12, d) 12-15.