

About Carbon Dating

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About Carbon Dating:

- Carbon dating is a widely-used method to establish the age of organic materials, things that were once living.
- Living things have carbon in them in various forms. The dating method is based on the fact that Carbon-14 (C-14), an isotope of carbon with an atomic mass of 14, is radioactive, and decays at a well-known rate.
- The most abundant isotope of carbon in the atmosphere is C-12. The ratio of C-12 to C-14 in the atmosphere is almost static, and is known.
- Plants and animals acquire C-12 and C-14 in roughly the same proportion as is available in the atmosphere.
- When they die, their interactions with the atmosphere stops. While C-12 is stable, the radioactive C-14 reduces to one half of itself in about 5,730 years — known as its 'half-life'.
- The changing ratio of C-12 to C-14 in the remains of a plant or animal after it dies can be measured, and can be used to deduce the approximate time when the organism died.
- Carbon dating cannot be used to determine the age of non-living things like rocks. Also, the age of things that are more than 40,000-50,000 years old cannot be arrived at through carbon dating.

Radiometric dating methods:

- These are used to calculate the age of inanimate things. Instead of carbon, decays of other radioactive elements that might be present in the material become the basis for the dating method. Two commonly employed methods for dating rocks are
- Potassium-argon dating: The radioactive isotope of potassium decays into argon, and their ratios can give a clue about the age of rocks.
- Uranium-thorium-lead dating: Uranium and thorium have several radioactive isotopes, and all of them decay into the stable lead atom. The ratios of these elements present in the material can be measured and used to make estimates about age.
- Cosmogenic nuclide dating: It is used to determine how long an object has remained exposed to sunlight. It is regularly applied to study the age of ice cores in polar regions.

Q1) What is a isotope easy definition?

A form of a chemical element in which the atoms have the same number of protons (part of the nucleus of an atom) but with a different number of neutrons (part of the nucleus of an atom).

Source: [Allahabad HC allows carbon dating of Gyanvapi 'Shivling': How does carbon dating work?](#)

Source: <https://vajiramandravi.com/current-affairs/about-carbon-dating/>

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