

## Isotopes Quiz PDF

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#### Which isotope is commonly used in carbon dating?

- Carbon-12
- Carbon-13
- Carbon-14
- Carbon-15

#### Which element has isotopes with the mass numbers 1, 2, and 3?

- Helium
- Hydrogen
- Lithium
- Beryllium

#### In which fields are isotopes used as tracers? (Select all that apply)

- Environmental studies
- Archaeology
- Food industry
- Astronomy

#### What factors contribute to the instability of a radioactive isotope? (Select all that apply)

- Excess neutrons
- Excess protons
- Balanced proton-neutron ratio
- High atomic number

#### What is the atomic number of an isotope determined by?

- Number of neutrons
- Number of protons

- Number of electrons
- Mass number

**What defines isotopes of the same element?**

- Different numbers of protons
- Different numbers of electrons
- Different numbers of neutrons
- Different chemical properties

**Explain why isotopes of the same element have different atomic masses.**

- True
- False
- Not applicable
- Unknown

**Describe the process of carbon dating and how it utilizes isotopes.**

- It measures the amount of Carbon-12 in a sample.
- It uses the decay of Carbon-14.
- It is based on the mass of the sample.
- It requires a chemical analysis.

**What are the implications of using radioactive isotopes in medical treatments?**

- They are always safe to use.
- They can cause side effects.
- They are only used in research.
- They have no medical applications.

**How does the presence of isotopes affect the calculation of an element's average atomic mass?**

- It does not affect the calculation.
- It is calculated as a simple average.
- It is based on the most abundant isotope.
- It is a weighted average based on abundance.

**Which of the following is a stable isotope of carbon?**

- Carbon-12
- Carbon-14
- Carbon-13
- Carbon-11

**Which isotopes are used in nuclear power generation? (Select all that apply)**

- Uranium-235
- Plutonium-239
- Thorium-232
- Carbon-12

**Discuss the role of isotopes in environmental studies and how they can be used to track pollution.**

- They have no role in environmental studies.
- They can help identify pollution sources.
- They are only used in laboratory settings.
- They are not applicable to pollution tracking.

**Why are certain isotopes more suitable for use as tracers in scientific research?**

- They are always radioactive.
- They have a long half-life.
- They are inexpensive to produce.
- They are easy to detect.

**Which of the following are considered stable isotopes? (Select all that apply)**

- Carbon-12
- Carbon-14
- Oxygen-16
- Uranium-238

**Which isotopes are commonly used in medical imaging? (Select all that apply)**

- Iodine-131
- Technetium-99m
- Carbon-14
- Cobalt-60

**Which isotope of uranium is used in nuclear reactors?**

- Uranium-235
- Uranium-238
- Uranium-239
- Uranium-234

**What is the mass number of an isotope with 20 protons and 22 neutrons?**

- 40
- 42
- 44
- 46

**What is the main use of radioactive isotopes in medicine?**

- Food preservation
- Energy production
- Diagnostic imaging
- Fertilizer production

**Which of the following elements have naturally occurring isotopes? (Select all that apply)**

- Hydrogen
- Helium
- Carbon
- Neon