

Inside the atom: particles and isotopes

Chemistry grades 9-10 (GCSE · IGCSE · O Level · Class 9-10) · Test

Name: _____ Date: _____ Class: _____ Mark: ____ / 20

This test checks atomic structure, isotopes and relative atomic mass. Show every step of a calculation, give units where they exist, and write your answers in full sentences when a question says explain.

Level: Chemistry grades 9-10 (GCSE · IGCSE · O Level · Class 9-10) · **Curriculum:** HS-PS1-1, GCSE C1

Time: 45 minutes · 9 questions · Total: 20 marks · Calculator allowed

Question 1 Nuclear particles (2 marks)

Name the two types of particle found in the nucleus of an atom and state the relative charge of each. (2 marks)

Question 2 Iron atom and ion (3 marks)

An iron atom has atomic number 26 and mass number 56.

- Calculate the number of protons and neutrons. (2 marks)
- State the number of electrons in an Fe^{3+} ion. (1 mark)

Question 3 Defining isotopes (2 marks)

Define the term isotopes. (2 marks)

Question 4 Lithium relative atomic mass (3 marks)

Lithium is 7.5 % lithium-6 and 92.5 % lithium-7. Calculate the relative atomic mass of lithium to 2 significant figures. (3 marks)

Question 5 Neutral atoms (2 marks)

Explain why an atom has no overall electrical charge. (2 marks)

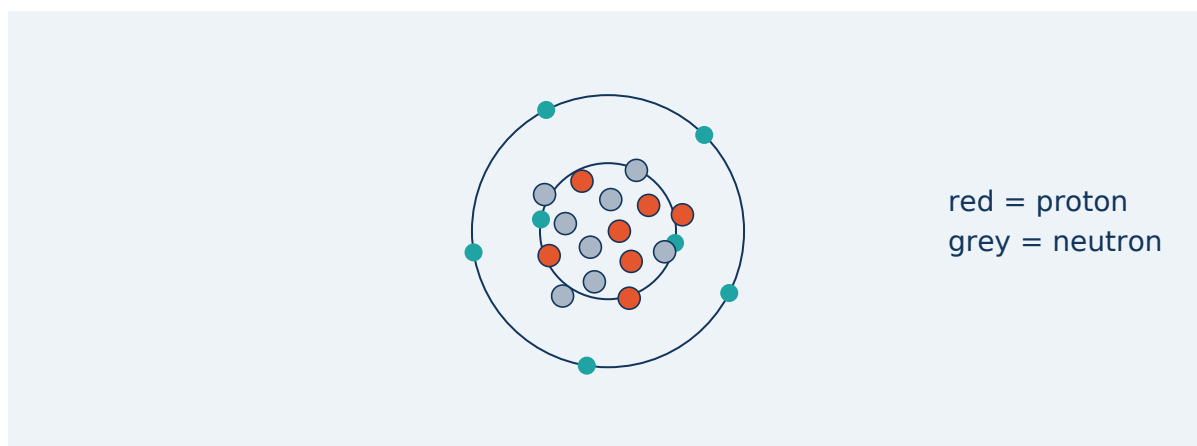
Question 6 Same chemistry (2 marks)

Explain why chlorine-35 and chlorine-37 react in the same way. (2 marks)

Question 7 Atom Z (2 marks)

Atom Z is shown below.

- Identify the element, given that nitrogen has atomic number 7. (1 mark)
- State its mass number. (1 mark)



Atom Z for the test.

Question 8 A decimal Ar (2 marks)

Chlorine has a relative atomic mass of 35.5. Explain why this is not a whole number. (2 marks)

Question 9 Uranium isotopes (2 marks)

Uranium has atomic number 92. Calculate the number of neutrons in uranium-235 and uranium-238. (2 marks)