

Test yourself

Chapter 2

1 An isotope of a neutral gallium atom has the symbol ${}^{69}_{31}\text{Ga}$. Which particles are present in one atom of this isotope?

A 31 protons, 69 neutrons and 31 electrons

B 31 protons, 38 neutrons and 31 electrons

C 31 protons, 38 neutrons and 38 electrons

D 69 protons, 38 neutrons and 69 electrons

2 What are the relative masses of an electron, a proton and a neutron?

A proton = 1, electron = $\frac{1}{1836}$, neutron = 0

B proton = 1, electron = $\frac{1}{183}$, neutron = 1

C proton = 1, electron = 1, neutron = 0

D proton = 1, electron = $\frac{1}{1836}$, neutron = 1

3 Which one of these statements best describes isotopes?

A Atoms of the same element with different numbers of neutrons

B Atoms of different elements with different numbers of nucleons

C Atoms of the same element with different numbers of electrons

D Atoms of different elements with the same number of nucleons

- 4 Which one of these statements is correct?
- A If an element occurs naturally it only has a single isotope
 - B Relative isotopic masses are always whole numbers
 - C The accurate relative atomic mass of an atom of carbon-12 is 12.001
 - D The relative atomic mass of an element is the mass of an atom of the element compared with the mass of an atom of carbon-12
- 5 Which one of the following values is the correct relative molecular mass of iron(III) sulfate, $\text{Fe}_2(\text{SO}_4)_3$?
(A_r values: Fe = 55.8, S = 32.1, O = 16.0)
- A 399.9
 - B 376.2
 - C 344.1
 - D 303.8
- 6 An electron beam is deflected at a greater angle than a proton beam when both are exposed to the same strong electric field. Why is this?
- A An electron has a negative charge while a proton has a positive charge
 - B An electron has a much larger mass than a proton
 - C An electron has a much smaller mass than a proton
 - D An electron has more electrical energy than a proton

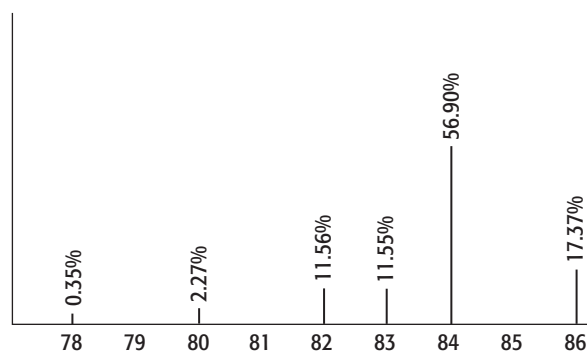
- 7 A sample of magnesium obtained from a meteorite has the isotopic composition, ^{24}Mg (74%), ^{25}Mg (10%), ^{26}Mg (16%). Which one of the following is most likely to be the correct relative atomic mass of the sample of magnesium, to 1 decimal place?

- A 24.2
- B 24.3
- C 24.4
- D 24.5

- 8 The number of electrons in the phosphide ion $^{31}_{15}\text{P}^{3-}$ is:

- A 12
- B 15
- C 18
- D 28

- 9 Which one of these statements about the mass spectrum for krypton, shown below, is correct?



- A The vertical axis shows the mass of the ions produced
- B The horizontal axis shows the mass/charge ratio of the ions produced
- C The accurate relative atomic mass of krypton is 85.1
- D There are five isotopes of krypton

10 Chlorine has two isotopes, ${}^{35}_{17}\text{Cl}$ and ${}^{37}_{17}\text{Cl}$. A chlorine molecule has the formula Cl_2 . Deduce the maximum number of different chlorine molecule ions, Cl_2^+ , that can appear in a mass spectrum of chlorine.

A 1

B 2

C 3

D 4