2.1 Atomic Structure: 10-minute Pack

AQA 7405 · Calculator allowed · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 This question is about the numbers of sub-atomic particles present in ions.

(a) An ion has the formula $^{24}Mg^{2+}$ (magnesium has atomic number 12). State the number of protons, neutrons and electrons present in this ion. **(3)**

(b) An ion has the formula $^{79}Br^{-}$ (bromine has atomic number 35). State the number of protons, neutrons and electrons present in this ion. **(3)**

(c) Explain, in terms of sub-atomic particles, why atoms are electrically neutral overall, but ions such as Mg^{2+} and Br^{-} are not. **(2)**

(Total for Question 1 is 8 marks)

© Revision Library | revisionlibrary.co.uk

Mark scheme · 2.1 Atomic Structure: 10-minute Pack

Question 1

(a) protons = 12 **B1**

(a) neutrons = 12 **B1**

(a) electrons = 10 **B1**

(a) Answer: Protons = 12, neutrons = 12, electrons = 10.

(b) protons = 35 **B1**

(b) neutrons = 44 **B1**

(b) electrons = 36 **B1**

(b) Answer: Protons = 35, neutrons = 44, electrons = 36.

(c) atoms have equal numbers of protons and electrons, so the positive and negative charges cancel, giving no overall (net) charge oe **B1**

(c) ions have unequal numbers of protons and electrons (electrons have been lost or gained), giving an overall positive or negative charge oe **B1**

(c) Answer: Atoms have equal numbers of protons and electrons so their charges cancel; ions have unequal numbers of protons and electrons, giving a net charge.

© Revision Library | revisionlibrary.co.uk