2.2 Atomic Structure, Isotopes and Relative Atomic Mass: 10-minute Pack

Total Marks

EDEXCEL 4CH1 · Calculator allowed · about 10 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 State the relative mass of a neutron compared with the mass of a proton, as taught in atomic structure.

(Total for Question 1 is 1 mark)

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2 State the charge of an electron, as used in descriptions of atomic particles.

(Total for Question 2 is 1 mark)

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3 Complete the electronic configuration for calcium, element number 20, using shell notation 2,8,8 etc, as in classroom practice.

(Total for Question 3 is 1 mark)

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4 Give the number of electrons in a neutral atom with atomic number 12.

(Total for Question 4 is 1 mark)

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5 An exam-style question gives the electron configuration 2,8,1 for an element in the first 20. Deduce how many electron shells this atom has and how many electrons are in its outer shell.

(Total for Question 5 is 1 mark)

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6 An atom has shell configuration 2,8,6. State its atomic number and the number of electrons in its outer shell.

(Total for Question 6 is 2 marks)

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7 Calculate the number of neutrons in a neutral atom of lead-208, written 208 82 Pb, which students often need to find when practising nuclide arithmetic.

(Total for Question 7 is 2 marks)

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Mark scheme · 2.2 Atomic Structure, Isotopes and Relative Atomic Mass: 10-minute Pack

Question 1

about 1 (same as a proton) or 1 relative mass unit **B1**

Answer: Approximately 1 (the neutron has about the same mass as a proton)

Question 2

negative (-1) charge **B1**

Answer: -1 (negative)

Question 3

2,8,8,2 **B1**

Answer: 2,8,8,2

Question 4

12 electrons **B1**

Answer: 12

Question 5

3 shells **B1**

Answer: Three shells; outer shell has 1 electron

Question 6

atomic number = 16 from 2 + 8 + 6 electrons **B1**

6 outer-shell electrons **B1**

Answer: Atomic number 16; outer shell 6 electrons

Question 7

uses neutrons = mass number - atomic number = 208 - 82 **M1**

neutrons = 126 cao **A1**

Answer: 126

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