2.3 Periodic Table: Organisation and Predicting Properties: 10-minute Pack

EDEXCEL 4CH1 · Calculator allowed · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Describe what a period is in the periodic table, naming what is the same for elements across a period.

(Total for Question 1 is 1 mark)

2 Two element cards give A: atomic number 18, relative atomic mass 40; B: atomic number 19, relative atomic mass 39. State which card comes first when these cards are put in modern periodic table order.

(Total for Question 2 is 1 mark)

3 A group 0 display gives the outer-shell electron counts: helium 2, neon 8, argon 8. A caption says every group 0 atom has eight outer electrons. Use the supplied data to give one counterexample to the caption.

(Total for Question 3 is 1 mark)

4 Predict whether an element in period 3 with an outer-shell electronic configuration of 3,5 (that is, five electrons in the outer shell) is likely to be a metal or a non-metal, in the context of periodic table position.

(Total for Question 4 is 1 mark)

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5 Describe how atomic radius generally changes across a period from left to right in the periodic table, giving a brief explanation based on nuclear charge and electron shells.

(Total for Question 5 is 1 mark)

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6 Deduce whether the element represented by the symbol 'Y' placed to the left of the staircase line but near the right side of the periodic table is more likely to be metallic or non-metallic, and give a brief reason referring to position and typical properties.

(Total for Question 6 is 2 marks)

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7 A student claims that elements in the same group must have identical electron arrangements in every shell. Two element cards show arrangements 2,1 and 2,8,1. Explain how these cards disprove the claim, referring to both outer electrons and occupied shells.

(Total for Question 7 is 2 marks)

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Mark scheme · 2.3 Periodic Table: Organisation and Predicting Properties: 10-minute Pack

Question 1

a period is a horizontal row; elements in the same period have the same number of electron shells — **B1**

Answer: A period is a horizontal row; elements in the same period have the same number of electron shells

Question 2

A comes first — **B1**

Answer: A comes first, because its atomic number is lower.

Question 3

helium has two outer electrons, not eight — **B1**

Answer: Helium has two outer electrons, not eight.

Question 4

non-metal — **B1**

Answer: Non-metal

Question 5

atomic radius decreases from left to right across a period — **B1**

Answer: Atomic radius decreases left to right across a period

Question 6

metallic — **B1**

reason: left of the staircase indicates metallic character even if near the boundary, so tends to show metal properties — **B1**

Answer: Metallic, because being left of the staircase indicates metal character even when near the metalloid boundary

Question 7

both have one outer electron, so they belong to the same group — **B1**

the first has two occupied shells and the second has three, so their complete arrangements differ — **B1**

Answer: Both have one outer electron and belong to the same group, but the first has two occupied shells and the second has three. Their complete electron arrangements are different.

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