**The periodic table**

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| Instructions to students  • You have 50 minutes to complete the test.  • Please answer all questions in the spaces provided.  • There is to be no talking during the test. | Marks  Section I: Multiple-choice questions: 10 marks  Section II: Short-answer questions: 30 marks  Section III: Extended-response questions: 10 marks  Total: 50 marks |

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| Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Class: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Score: /50  Grade: % |
| Comments: | |

Section I: Multiple-choice questions

For each question, circle the correct answer.

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| 1 Which group of elements can be described by the following statement?   ‘These elements have quite a low melting point and are soft and highly reactive. In their pure state, they often resemble Plasticine that, when cut, is very briefly shiny silver before reacting with the air to become white again.’ | | L:\1. Publishing and Editorial\1. Product\Oxford Science\Oxford Science VICTORIA\Oxford Science 10 VIC\2. Extras\16. Class tests\Artwork\Final jpegs\CT0301_07059-rm.jpg |
| A | alkali metals |
| B | alkaline earth metals |
| C | transition metals |
| D | metalloids |
| 2 Melting points and boiling points of halogens increase: | | |
| A | across the periodic table, left to right. | |
| B | across the periodic table, right to left. | |
| C | down the periodic table. | |
| D | up the periodic table. | |
| 3 The atomic number of calcium is 20. The electron configuration will be: | | |
| A | 2, 10, 8 | |
| B | 2, 8, 10 | |
| C | 2, 8, 8, 2 | |
| D | 8, 8, 4 | |

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| 4 This atom represents the element: | | |
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| A | copper. | |
| B | sodium. | |
| C | nitrogen. | |
| D | oxygen. | |
| 5 How many valence electrons does a fluorine atom have? | | |
| A | 9 | |
| B | 7 | |
| C | 10 | |
| D | 8 | |
| 6 In a chemical reaction, a potassium atom is most likely to: | | |
| A | lose two electrons. | |
| B | gain two electrons. | |
| C | lose one electron. | |
| D | gain one electron. | |
| 7 Which of the following statements is true? | | |
| A | All metals conduct electricity in the solid state. | |
| B | Most metals conduct electricity in the solid state. | |
| C | Some metals conduct electricity in the solid state. | |
| D | No metals conduct electricity in the solid state. | |
| 8 Which property do metalloids share with metals? | | L:\1. Publishing and Editorial\1. Product\Oxford Science\Oxford Science VICTORIA\Oxford Science 10 VIC\2. Extras\16. Class tests\Artwork\Final jpegs\CT0303_07059-r.jpg |
| A | Malleability |
| B | Ductility |
| C | Electrical conductivity |
| D | Lustre |
| 9 The formula for copper sulphide is: | | |
| A | CuS2. | |
| B | CuS3. | |
| C | CuS. | |
| D | Cu2S. | |
| 10 Noble gases are all: | | |
| A | rare. | |
| B | unreactive. | |
| C | conductive. | |
| D | radioactive**.** | |

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|  | Section I total marks:  /10 marks |

Section II: Short-answer questions

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| 11 Give the formulas for the following ionic compounds. | |
| |  |  | | --- | --- | | Ionic compound | Formula | | Silver bromide |  | | Calcium iodide |  | | Zinc nitride |  | | |
|  | /3 marks |
| 12 Explain how Mendeleev was able to predict the existence of elements that hadn’t been discovered yet. | |
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|  | /2 marks |
| 13 What is the main difference in properties between alkali metals and alkaline earth metals? | |
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| 14 What is the name given to the group of elements found between the metals and non-metals? Give one property this group shares with the metals and one property this group share with the non-metals. | | | |
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|  | | /3 marks | |
| 15 What are delocalised electrons? How do they relate to the lustre and electrical conductivity of a metal? | | | |
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| 16 Silver has a greater electrical conductivity than copper. Give a reason why we use copper in wires instead of silver. | | |
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|  | /1 mark |
| 17 Draw electron shell diagrams in the space provided below for lithium and fluorine. | | |
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|  | /2 marks |
| 18 What is a semiconductor? Give two examples of elements that are semiconductors. | | |
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|  | /3 marks |

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| 19 Radon is a very dangerous noble gas that can be found in natural springs. Explain why radon is so dangerous. | | | |
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| 20 What sort of molecule is shown in the diagram? Why does the number of electrons not equal the number of protons in each atom? | | | |
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| 21 Complete the table by filling in the spaces for the missing element names, atomic numbers and electron configurations. | | | |
| |  |  |  | | --- | --- | --- | | Element | Atomic number | Electron configuration | |  | 7 | 2, 5 | | Neon |  |  | |  | 12 |  | | Phosphorus |  |  | |  | 19 |  | | | | |
|  | | /5 marks | |
| 22 Why are ionic compounds difficult to melt? | | | |
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|  | | /2 marks | |
|  | | Section II total marks:  /30 marks | |

Section III: Extended-response questions

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| 23 Nitinol is an example of a memory alloy made from nickel and titanium. Explain how nitinol is created and why it is a benefit to use nitinol in eye glasses and dental wire. | |
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| 24 Outline how the Bohr model can be used to explain how electrons are arranged in an atom. | |
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|  | /5 marks |
|  | Section III total marks:  /10 marks |