

C4.2 Pre-Unit Quiz: Extraction of Metals

Mark Scheme

| Qu | Answer | Marks | Supporting information for fix-it tasks |
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| 1 | B | 1 | Answering A or C suggests a gap in knowledge about the general word equation for reaction of metals and acids. <i>To fix it, ask students to copy the correct general equation out and then give practice questions of the reactants and ask students to write out the products.</i> |
| 2 | C | 1 | Answering incorrectly suggests a gap in knowledge about reusing and recycling resources. <i>To fix it, ask students to describe how they would reuse and recycle a glass jar.</i> |
| 3 | C | 1 | Answering A suggests that the student might associate the number of shells with the group number, instead of the period number. Answering B suggests that the student might associate the number of electrons with the group number. <i>To fix it, give students some electronic configuration diagrams and ask them to identify the element in the Periodic Table, and then to write down the period and group number of that element.</i> |
| 4 | A | 1 | Answering B suggests a gap in knowledge because the opposite of this statement is true. <i>To fix it, ask students to explain why fossil fuels are an example of a finite resource using the definition in part A.</i> Answering C suggests the common misconception that all finite resources are currently running out, however a more accurate description must include the rate of use vs. the rate of production. <i>To fix it ask students to compare a finite resource and an infinite resource, using examples.</i> |
| 5 | C | 1 | Answering A suggests a gap in knowledge about alkali metals being very reactive. <i>To fix it, remind students about the alkali metals in water demo (and/or show a video clip) and then ask them to list properties of alkali metals.</i> Answering B suggests a misconception that because group 1 elements are metals, they must have very high melting points, however these elements have relatively low melting and boiling points. <i>To fix it, give students mp and bp data on alkali metals vs transition metals and ask them to describe what the data shows.</i> |
| 6 | B | 1 | Answering A suggests or C suggests a gap in knowledge about metals + halogens → metal halide. <i>To fix it, students should write down the general equation and then use the periodic table to write out lots of example reactions.</i> |
| 7 | A | 1 | Answering B suggests a gap in knowledge about how many electrons are in the 2 nd electron shell. |



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| | | | Answering C suggests a gap in knowledge about how many electrons are in the 1 st electron shell. <i>To fix it, reteach the rules of writing out electronic configuration and then give many practise questions.</i> |
| 8 | C | 1 | Answering A suggests a misconception that salt and water have similar boiling points. However it does show some understanding of the method of distillation. <i>To fix it, ask students to explain how a mixture of ethanol and water can be separated when the boiling point of ethanol is 78°C.</i> Answering B suggests a gap in knowledge because the volume capability of distillation is not relevant here. <i>To fix it, ask students to explain how evaporation takes place during distillation and why this is expensive.</i> |
| 9 | C | 1 | Answering A or B suggests a gap in being able to interpret the reactivity of metals using the reactivity series. <i>To fix it, ask students to copy out some of the reactivity series and then ask them to label on there the most and least reactive metals.</i> |
| 10 | A | 1 | Answering B suggests a misconception that filtration can separate elements in a compound. <i>To fix it, ask students to explain the difference between a chemical reaction and a physical change. Then recap that separation techniques do not involve chemical reactions.</i> Answering C suggests a misconception that reacting with an acid will separate the elements in a compound. <i>To fix it, ask students to explain what happens in a displacement reaction.</i> |