

## UNIT 5B PRACTICE QUIZ 2 – DISPLACEMENT REACTIONS AND THE REACTIVITY SERIES

Do not answer these questions on this document.

Write your answers on a sheet of paper; then click on the answer sheet provided at the end of the questions.

Use your Periodic Table and the reactivity series in your course notes.

You will also need the following information:

- manganese lies between aluminium and carbon in the reactivity series
- nickel lies between iron and tin in the reactivity series
- mercury is very similar in reactivity to silver

|           |   |   |
|-----------|---|---|
| <b>1.</b> | Which of the following metals will react the most rapidly with water? |   |
|           | <b>A</b>  | Barium – Group 2 closest to the bottom        |
|           | <b>B</b>  | Beryllium – Group 2 but higher up than barium |
|           | <b>C</b>  | Manganese – d-block so less reactive          |
|           | <b>D</b>  | Nickel – d-block so less reactive             |
|           | <b>E</b>  | Strontium – Group 2 but higher up than barium |
| <b>1</b>  |   |   |

|           |   |   |
|-----------|---|---|
| <b>2.</b> | How would you expect manganese to react with acids?<br>It's above zinc, which reacts steadily with acids<br>It's below magnesium, which reacts steadily/rapidly with acids<br>Ignore aluminium as it is anomalous |   |
|           | <b>A</b>  | Explosively                                     |
|           | <b>B</b>  | Rapidly   |
|           | <b>C</b>  | Steadily  |
|           | <b>D</b>  | Slowly (reaction happens but it barely visible) |
|           | <b>E</b>  | Not at all                                      |
| <b>1</b>  |   |   |

|           |   |  |
|-----------|---|--|
| <b>3.</b> | How would you expect mercury to react with acids? |  |
|           | <b>A</b>  | Explosively  |
|           | <b>B</b>  | Rapidly  |
|           | <b>C</b>  | Steadily   |
|           | <b>D</b>  | Slowly (reaction happens but it barely visible)            |
|           | <b>E</b>  | Not at all – it is below hydrogen in the reactivity series |
| <b>1</b>  |   |  |

UNIT 5B – CHEMICAL REACTIONS II – REDOX REACTIONS

|    |   |   |
|----|---|---|
| 4. | If some nickel metal is added to a solution of copper sulfate,<br><b>Ni is more reactive than Cu so will displace it; the more reactive atom is oxidised and the less reactive atom is reduced; sulfate spectates</b> |   |
|    | A   | nothing will happen   |
|    | B   | <b>The nickel will be oxidized and the copper will be reduced</b> |
|    | C   | The copper will be oxidised and the nickel will be reduced        |
|    | D   | The nickel will be oxidized and the sulfate will be reduced       |
|    | E   | The copper will be oxidized and the sulfate will be reduced       |
|    |   | 1   |

|    |  |  |
|----|--|--|
| 5. | If some nickel metal is added to a solution of zinc sulfate, |  |
|    | A  | <b>nothing will happen – (Ni is less reactive than Zn so will not displace it)</b> |
|    | B  | The nickel will be oxidised and the zinc will be reduced                           |
|    | C  | The zinc will be oxidised and the nickel will be reduced                           |
|    | D  | The nickel will be oxidized and the sulfate will be reduced                        |
|    | E  | The zinc will be oxidized and the sulfate will be reduced                          |
|    |  | 1  |

|    |   |  |
|----|---|--|
| 6. | The element manganese could be extracted from its main oxide MnO <sub>2</sub> |  |
|    | A   | <b>aluminium but not carbon – (Mn is above C, so no, but below Al, so yes)</b> |
|    | B   | carbon but not aluminium   |
|    | C   | either aluminium or carbon   |
|    | D   | neither aluminium nor carbon   |
|    | E   | it's not possible to tell from the information provided                        |
|    |   | 1  |

|    |   |  |
|----|---|--|
| 7. | The element mercury could be reacted from its main ore HgS by |  |
|    | A   | <b>either carbon or hydrogen – (Hg is below C and below H, so yes)</b> |
|    | B   | hydrogen but not carbon  |
|    | C   | carbon but not hydrogen  |
|    | D   | neither hydrogen nor carbon  |
|    | E   | it's not possible to tell from the information provided                |
|    |   | 1  |

|    |  |  |
|----|--|--|
| 8. | Before being converted into mercury, HgS is first roasted in oxygen:<br>$2\text{HgS} + 3\text{O}_2 \rightarrow 2\text{HgO} + 2\text{SO}_2$<br><b>(+, - 0 → +2, -2 +4, -2)</b><br>In this reaction, |  |
|    | A  | Hg is oxidized and O is reduced  |
|    | B  | <b>S is oxidized and O is reduced (S goes from -ve to +4, O goes from to -2)</b> |
|    | C  | Hg is oxidized and S is reduced  |

UNIT 5B – CHEMICAL REACTIONS II – REDOX REACTIONS

|  |   |                                       |   |
|--|---|---------------------------------------|---|
|  | D | S is oxidised and Hg is reduced       |   |
|  | E | No oxidation or reduction takes place |   |
|  |   |                                       | 1 |

|           |   |  |   |
|-----------|---|--|---|
| <b>9.</b> | If bromine (Br <sub>2</sub> ) is added to sodium iodide (NaI) $\text{Br}_2 + 2\text{NaI} \rightarrow 2\text{NaBr} + \text{I}_2$ |  |   |
|           | A   | No reaction will take place                |   |
|           | B   | Br will be oxidized and Na will be reduced |   |
|           | C   | Br will be reduced and Na will be oxidized |   |
|           | D   | Br will be oxidized and I will be reduced  |   |
|           | E   | Br will be reduced and I will be oxidized  |   |
|           |   |  | 1 |

|            |                                     |                                      |   |
|------------|-------------------------------------|--------------------------------------|---|
| <b>10.</b> | The reason for your answer to Q9 is |                                      |   |
|            | A                                   | iodine is more reactive than bromine |   |
|            | B                                   | sodium is more reactive than bromine |   |
|            | C                                   | bromine is more reactive than sodium |   |
|            | D                                   | iodine is more reactive than sodium  |   |
|            | E                                   | bromine is more reactive than iodine |   |
|            |                                     |                                      | 1 |

[Go to the answer sheet](#)