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**Page 51****4(b)(i)**

The diagram shows that a chemical reaction took place because:

- The substances combined to form a new product with different properties.

**4(b)(ii)**

**Substance Q:** Oxygen.

**Substance R:** Carbon dioxide.

**4(b)(iii)**

The diagram shows conservation of mass because:

- The number of atoms of each element is the same before and after the reaction.
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**Page 52****5(a)**

Order of reactivity:

1. **Zinc (most reactive)**
2. **Copper**
3. **Lead**
4. **Silver (least reactive)**

**Page 53****(b)**

**Metal that reacted:** Zinc.

Explanation: Zinc reacts with dilute hydrochloric acid to produce hydrogen gas, while other metals in the series might not.

**(c)**

**Prediction correctness:** The prediction is incorrect.

Explanation: Zinc will react with silver nitrate in a displacement reaction because zinc is more reactive than silver.

**(d)**

**Gold placement in reactivity series:** Gold should be placed at the bottom of the series.

Explanation: Gold is very unreactive and does not easily form compounds with other elements.

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**Page 54****6(a)(i)**

**Type of substance (paint):** A mixture.

**6(a)(ii)**

**Type of substance (titanium dioxide):** A compound.

**6(a)(iii)**

**Reason particles sank:** The particles are denser than the liquid, causing them to settle at the bottom.

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**Page 55****7(a)(i)**

**Mixture of two elements:** Diagram A.

**7(a)(ii)**

**Mixture of two compounds:** Diagram D.

7(a)(iii)

**Mixture of an element and a compound:** Diagram C.

7(b)

**Difference between a compound and a mixture:**

- A compound has chemically combined elements with fixed proportions.
- A mixture has physically combined substances that can be separated.

7(c)(i)

**Name and formula (diagram B):**

Name: Oxygen gas.

Formula: O<sub>2</sub>.

7(c)(ii)

**Name and formula (diagram D):**

Name: Water.

Formula: H<sub>2</sub>O.

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**Page 57**

8(a)

**Properties suggesting jovium is a metal:**

- It has a high melting point.
- It is a good conductor of heat and electricity.

8(b)(i)

**Method of separation:** Filtration.

8(b)(ii)

**Labels for results:**

- A: Filter paper.
- B: Filtrate.

8(c)

**What happened to the liquid:** It evaporated, leaving blue crystals in the dish.