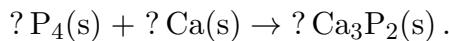


This print-out should have 25 questions. Multiple-choice questions may continue on the next column or page – find all choices before answering.

**001** 10.0 points

Balance the equation and identify the type of reaction for



- 1.** 2; 6; 2 — displacement

- 2.** 1; 6; 2 — synthesis

- 3.** 2; 6; 2 — decomposition

- 4.** 1; 6; 2 — displacement

- 5.** 2; 6; 2 — synthesis

- 6.** 1; 6; 2 — decomposition

**002** 10.0 points

Iron reacts with oxygen to produce iron(III) oxide. In the balanced equation, the coefficient of the product is

- 1.** 1.

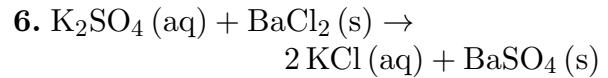
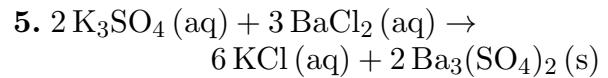
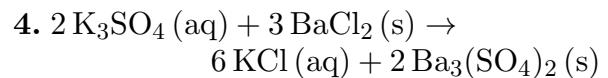
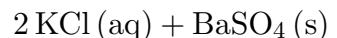
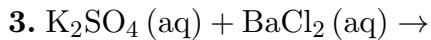
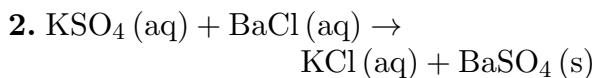
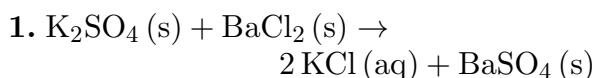
- 2.** 2.

- 3.** 3.

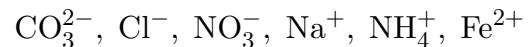
- 4.** 4.

**003** 10.0 points

Write the formula unit equation for this reaction occurring in water: Potassium sulfate and barium chloride are mixed to form potassium chloride and barium sulfate.

**004** 10.0 points

When the ions



are mixed in aqueous solution, what substance is likely to form an insoluble precipitate?

- 1.**  $\text{NH}_4\text{NO}_3$

- 2.**  $\text{FeCO}_3$

- 3.**  $\text{Na}_2\text{CO}_3$

- 4.**  $\text{NH}_4\text{Cl}$

- 5.**  $\text{NaNO}_3$

- 6.**  $\text{ClNO}_3$

**005** 10.0 points

Which reactants will NOT generate a gaseous product?

- 1.**  $\text{NaOH} + \text{NH}_4\text{Cl}$

- 2.**  $\text{Na} + \text{H}_2\text{O}$

- 3.**  $\text{CaCO}_3 + \text{HCl}$

- 4.**  $\text{Zn} + \text{HCl}$

- 5.**  $\text{Na}_2\text{CO}_3 + \text{CaCl}_2$

**006** 10.0 points

Which of the following aqueous solutions should NOT form a precipitate with aqueous  $\text{Ba}(\text{NO}_3)_2$ ?

**1.** K<sub>2</sub>SO<sub>4</sub>**2.** KOH**3.** K<sub>3</sub>PO<sub>4</sub>**4.** K<sub>2</sub>CO<sub>3</sub>

---

**007** 10.0 points

Write the complete combustion reaction of liquid octane (C<sub>8</sub>H<sub>18</sub>), a component typical of the hydrocarbons in gasoline. What is the coefficient of water vapor in the balanced equation for the reaction? (Balance the equation with the smallest possible whole number coefficients.)

**1.** 16**2.** 8**3.** 3**4.** 18**5.** 25**6.** 24**7.** 2**8.** 4**9.** 15**10.** 20

---

**008** 10.0 points

Zn is an active metal above H on the activity series. When zinc is placed in an acidic solution one of the products produced is

**1.** H<sub>2</sub>.

**2.** There is no reaction because Zn is above H.

**3.** Zn(OH)<sub>2</sub>.

**4.** H<sub>2</sub>O.

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**009** 10.0 points

What would be the products for the reaction



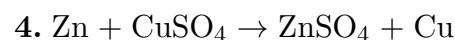
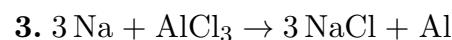
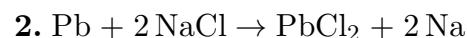
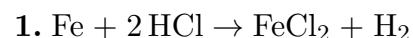
(Just identify the correct products for the reaction. You do not need to balance the equation.)

**1.** I<sub>2</sub> + KBr**2.** No reaction would occur.**3.** BrI + K<sup>+</sup>**4.** I<sup>1-</sup> + K<sup>+</sup>

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**010** 10.0 points

Which one of the following reactions would you predict would not occur?



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**011** 10.0 points

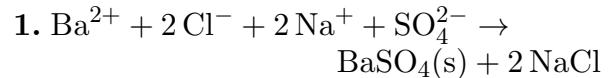
Identify the products for the reaction

**1.** CaOH + H**2.** No reaction would occur.**3.** CaH<sub>2</sub> + O<sup>2-</sup>**4.** CaH + OH<sup>-</sup>**5.** Ca(OH)<sub>2</sub> + H<sub>2</sub>

---

**012** 10.0 points

What is the coefficient for oxygen in the balanced chemical equation for the combustion of heptane (C<sub>7</sub>H<sub>16</sub>)?

**1.** 9**2.** 1**3.** 5**4.** 7**016** 10.0 points

Which would be likely to displace a bromide ion from solution?

**5.** 13

- 1.** Neither chlorine nor iodine would displace a bromide ion from solution.

**6.** 11**2.** chlorine**7.** None of these**3.** iodine**8.** 8

- 4.** Both could displace a bromide ion from solution.
- 

**013** 10.0 points

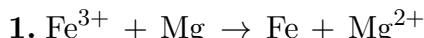
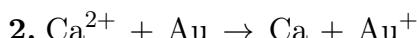
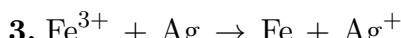
Which of the following aqueous solutions should form a precipitate with aqueous  $\text{Fe}(\text{NO}_3)_3$ ?

**1.** KOH**017** 10.0 points**2.**  $\text{K}_2\text{SO}_4$ 

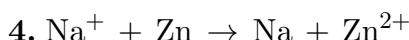
The combustion of ammonia produces NO and water. If the chemical reaction for this process is properly balanced using the smallest possible integers, what is the sum of the coefficients for the products?

**3.** KCl**1.** 8**4.**  $\text{KNO}_3$ **2.** 12**014** 10.0 points**3.** 9

Which of the displacement reactions below occurs as written (don't worry about balancing)?

**4.** 18**5.** 10**018** 10.0 points

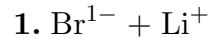
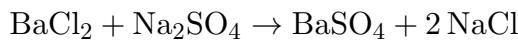
What would be the products for the reaction

**5.** None of the reactions occurs as written.

(Just identify the correct products for the reaction. You do not need to balance the equation.)

**015** 10.0 points

Give the net ionic equation for the reaction



**2.** No reaction would occur.

**3.**  $\text{Br}_2 + \text{LiF}$

**4.**  $\text{FBr} + \text{Li}^+$

---

**019** 10.0 points

In the equation



identify the spectator ion(s) for the reaction.

**1.**  $\text{Mg}^{2+}, \text{H}^+, \text{SO}_4^{2-}$

**2.**  $\text{Mg}^{2+}, \text{SO}_4^{2-}$

**3.**  $\text{Mg}^{2+}, \text{HSO}_4^-$

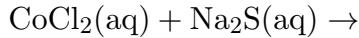
**4.**  $\text{SO}_4^{2-}$  only

**5.**  $\text{CO}_3^{2-}, \text{H}^+$

---

**020** 10.0 points

Identify the solid product that forms when the following aqueous solutions are mixed:



**1.** NaCl

**2.** CoS and 2NaCl

**3.** CoS and NaCl

**4.** CoS

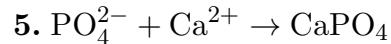
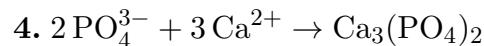
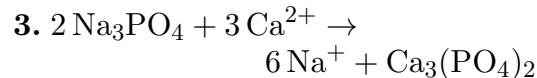
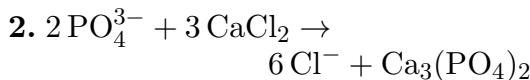
**5.** No solid products are formed.

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**021** 10.0 points

Write the net ionic equation for this reaction occurring in water: Sodium phosphate and calcium chloride are mixed to form sodium chloride and calcium phosphate.

**1.** No reaction occurs.



**022** 10.0 points

Which one of the following metals would NOT displace hydrogen from a dilute solution of HCl?

**1.** Al

**2.** Ag

**3.** Fe

**4.** Ni

---

**023** 10.0 points

The observable reaction product involving a reaction mixture of  $\text{Na}_2\text{SO}_3$  and HCl is

**1.** the formation of NaCl precipitate.

**2.** the formation of  $\text{SO}_2$  gas.

**3.** There is no reaction.

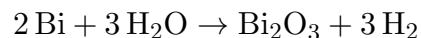
**4.** the formation of  $\text{H}_2$  gas and Na metal.

**5.** the formation of  $\text{Cl}_2$  gas.

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**024** 10.0 points

The chemical reaction



represents a

**1.** synthesis reaction.

**2.** single-replacement reaction.

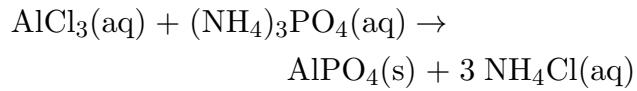
**3.** double-replacement reaction.

**4.** decomposition reaction.

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**025** 10.0 points

In the equation



identify the spectator ion(s) for the reaction.

- 1.**  $\text{NH}_4^+$  only
- 2.**  $\text{Al}^{3+}$ ,  $\text{NH}_4^+$
- 3.**  $\text{Al}^{3+}$ ,  $\text{PO}_4^{3-}$
- 4.**  $\text{NH}_4^+$ ,  $\text{Cl}^-$ ,  $\text{Al}^{3+}$ ,  $\text{PO}_4^{3-}$
- 5.**  $\text{NH}_4^+$ ,  $\text{Cl}^-$