**Acid Unit: Conjugate Pairs**

1. Use the following equilibrium to answer the question below.

HSO4-(aq) + HPO42-(aq) 🡨 🡪 SO42-(aq) + H2PO4-(aq)

In this equilibrium, the strongest acid and its conjugate base are \_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_

|  |  |  |
| --- | --- | --- |
| a | H2PO4-(aq) | HPO42-(aq) |
| b | HSO4-(aq) | SO42-(aq) |
| c | HSO4-(aq) | HPO42-(aq) |
| d | SO42-(aq) | H2PO4-(aq) |

1. Use the following equilibrium to answer the question below.

H3PO4(aq) + HCOO-(aq) 🡨 🡪 HCOOH(aq) + H2PO4-(aq)

In this equilibrium, the strongest base and its conjugate acid are \_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_

|  |  |  |
| --- | --- | --- |
| a | H2PO4-(aq) | H3 PO4(aq) |
| b | HCOO-(aq) | HCOOH(aq) |
| c | HCOO-(aq) | H3PO4(aq) |
| d | HCOOH(aq) | H2PO4-(aq) |

1. Use the following equilibrium to answer the question below.

CH3COOH(aq) + OCl-(aq) 🡨 🡪 CH3COO-(aq) + HOCl(aq)

In this equilibrium, the strongest acid and the strongest base are \_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_

|  |  |  |
| --- | --- | --- |
| a | HOCl(aq) | CH3COOH(aq) |
| b | HOCl(aq) | CH3COO-(aq) |
| c | OCl-(aq) | CH3COO-(aq) |
| d | CH3COOH(aq) | OCl-(aq) |

1. Use the following equilibrium to answer the question below.

HSO3-(aq) + OOCCOO2-(aq) 🡨 🡪 SO32-(aq) + HOOCCOO-(aq)

In this equilibrium, the two chemicals that act as bases are \_\_\_\_\_ and \_\_\_\_\_

|  |  |  |
| --- | --- | --- |
| a | SO32-(aq) | OOCCOO2-(aq) |
| b | HSO3-(aq) | HOOCCOO-(aq) |
| c | OOCCOO2-(aq) | HOOCCOO-(aq) |
| d | SO32-(aq) | HSO3-(aq) |

1. Use the following equilibrium to answer the question below.

HCO3- (aq) + HOOCCOO-(aq) 🡨 🡪 OOCCOO2-(aq) + H2CO3 (aq)

In this equilibrium, the two chemicals that act as acids are \_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_

|  |  |  |
| --- | --- | --- |
| a | HCO3- (aq) | OOCCOO2-(aq) |
| b | HOOCCOO-(aq) | H2CO3 (aq) |
| c | HCO3- (aq) | H2CO3 (aq) |
| d | H2CO3aq) | OOCCOO2-(aq) |

1. Which ion is **LEAST capable** of acting as both an acid and or a base in an aqueous solution?

|  |  |
| --- | --- |
| a | HOOCCOO-(aq) |
| b | HCO3- (aq) |
| c | H3O+(aq) |
| d | H2PO4-(aq) |

1. Which ion in the list below is **the strongest acid** ?

|  |  |
| --- | --- |
| a | H2S(aq) |
| b | HCO3-(aq) |
| c | HSO4-(aq) |
| d | CH3COO-(aq) |

1. Which ion in the list below is **the strongest base?**

|  |  |
| --- | --- |
| a | NO3-(aq) |
| b | OOCCOO2-(aq) |
| c | CH3COO-(aq) |
| d | NH3(aq) |

1. **Numerical response question**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |

Left justify your answer in the boxes provided.

|  |
| --- |
| Write the equation that represents the ionization of phosphoric acid. Put the answer in ascending order  \_\_\_\_\_\_\_\_\_\_\_ + \_\_\_\_\_\_\_\_\_\_\_\_ 🡨 🡪 \_\_\_\_\_\_\_\_\_\_\_ + \_\_\_\_\_\_\_\_\_\_\_   1. H3PO4 2. H+ 3. H2O 4. PO43— 5. H3O+ 6. H2PO4- |

Solutions:

1. B
2. B
3. D
4. A
5. B
6. C
7. C
8. D
9. 1356