**Acid Unit: Brǿnsted Lowry**

1. Which reaction favours the **reactants?**

|  |  |
| --- | --- |
| a | H3O+(aq) + OH-(aq) 🡨 🡪 2H2O(l) |
| b | HCN(aq) + OH-(aq) 🡨 🡪 CN-(aq) + H2O(l) |
| c | SO42-(aq) + H2S(aq) 🡨 🡪 HSO4-(aq) + HS-(aq) |
| d | H2CO3(aq) + NH3(aq) 🡨 🡪 HCO3-(aq) + NH4+(aq) |

1. Which reaction favours the **products?**

|  |  |
| --- | --- |
| a | HCO3-(aq) + SO32-(aq) 🡨 🡪 CO32-(aq) + HSO3-(aq) |
| b | C2H5OCOOH(aq) + HCO3- 🡨 🡪 C­2H5OCOO-(aq) + H2CO3(aq) |
| c | HNO2(aq) + F-(aq) 🡨 🡪 NO2-(aq) + HF(aq) |
| d | C3H7COO-(aq) + H2PO4-(aq) 🡨 🡪 C3H7COOH(aq) + HPO42-(aq) |

1. The reaction HB(aq) + X-(aq) 🡨 🡪 HX(aq) + B-(aq) will favour products if \_\_\_\_\_

|  |  |
| --- | --- |
| a | HB(aq) is a stronger acid than HX(aq) |
| b | HB(aq) is a weaker acid than HX(aq) |
| c | B-(aq) is a stronger base than X-(aq) |
| d | HB(aq) is an amphiprotic acid. |

1. When added to H3PO4(aq), which base would cause a reaction that favours the **reactant**s?

|  |  |
| --- | --- |
| a | OH-(aq) |
| b | SO42-(aq) |
| c | HCO3-(aq) |
| d | HSO3-(aq) |

1. Choose the **correct statement** for the following reaction.

**H2PO4-(aq) + CH3COO-(aq) 🡨 🡪 CH3COOH(aq) + HPO42-(aq)**

|  |  |
| --- | --- |
| a | Equilibrium favours the products. |
| b | H2PO4-(aq) acts as a base. |
| c | CH3COO-(aq) acts as an acid. |
| d | HPO42-(aq) acts as a base. |

1. If 0.10 solutions of HOCl(aq) and KCH3COO(aq) are mixed together, the following equilibrium is established:

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

This reaction \_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |
| --- | --- |
| a | Favours reactants because HOCl(aq) is a weaker base than the acid CH3COO-(aq) |
| b | Favours reactants because HOCl(aq) is a stronger acid than the base CH3COO-(aq) |
| c | Favours products because HOCl(aq) is a stronger base than the acid CH3COO-(aq) |
| d | Favours products because OCl-(aq) is a weaker base than CH3COO-(aq) |

1. A Brǿnsted Lowry acid will \_\_\_\_\_\_\_\_\_\_\_\_ a \_\_\_\_\_\_\_\_\_\_\_\_\_ during a neutralization reaction.

|  |  |  |
| --- | --- | --- |
| a | Donate | Neutron |
| b | Accept | Proton |
| c | Donate | Proton |
| d | Accept | Neutron |

1. A Brǿnsted Lowry base will \_\_\_\_\_\_\_\_\_\_\_\_ a \_\_\_\_\_\_\_\_\_\_\_\_\_ during a neutralization reaction.

|  |  |  |
| --- | --- | --- |
| a | Donate | Neutron |
| b | Accept | Proton |
| c | Donate | Proton |
| d | Accept | Neutron |

1. Consider the Brǿnsted Lowry reaction below:

**NH3(aq) + H2O(l) 🡨 🡪 NH4+(aq) + OH-(aq)**

A Brǿnsted Lowry conjugate acid-base pair is \_\_\_\_ and \_\_\_\_\_.

|  |  |  |
| --- | --- | --- |
| a | H2O(l) | OH-(aq) |
| b | NH3(aq) | H2O(l) |
| c | NH4+(aq) | OH-(aq) |
| d | NH4+(aq) | H2O(l) |

1. **Numerical response question**

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

Left justify your answer in the boxes provided.

|  |
| --- |
| Choose all entities in the list below that can act as Brǿnsted Lowry Acids. Record the answer(s) in ascending order.   1. HSO4-(aq) 2. SO42-(aq) 3. HCOOH(aq) 4. HCOO-(aq) 5. NH3(aq) 6. NH4+(aq) 7. PO43-(aq) 8. HPO42-(aq) |

Solutions:

1. C
2. B
3. A
4. B
5. D
6. B
7. C
8. B
9. A
10. 1368