**Question 1: Using the Lewis concept of acids and bases, identify the Lewis acid and base in each of the following reactions:**

\rm Al(NO_3)_3(s)+6H_2O(l)\rightarrow {Al(H_2O)_6}^{3+}(aq)+{NO_3}^{-}(aq)

\rm CH_3NH_2(g)+HBr(g)\rightarrow CH_3NH_4Br(s)

1. Al(NO3)3
2. Lewis Acid
3. Lewis Base
4. Neither
5. H2O
6. Lewis Acid
7. Lewis Base
8. Neither
9. CH3NH2
10. Lewis Acid
11. Lewis Base
12. Neither
13. HBr
14. Lewis Acid
15. Lewis Base
16. Neither

**pH of a Strong Acid and a Strong Base**

**Question 2: 0.35 g of hydrogen chloride (\rm HCl) is dissolved in water to make 6.5 L of solution. What is the \rm pHof the resulting hydrochloric acid solution?**

|  |
| --- |
| **Express the pH numerically.** |
| **pH =** |

[show answer](javascript:requestSolution('1'))

**Question 3:**

**Part B**

**0.55 g of sodium hydroxide (\rm NaOH) pellets are dissolved in water to make 7.0 L of solution. What is the \rm pHof this solution?**

**Enter the pH numerically using four significant figures.**

|  |  |  |
| --- | --- | --- |
| \rm pH = |  |  |
|  | | |

**Question 4: Many household cleaning products contain oxalic acid, \rm H_2C_2O_4, a diprotic acid with the following dissociation constants: K_{\rm a1}=5.9\times 10^{-2}, K_{\rm a2}=6.4\times 10^{-5}.**

Calculate the equilibrium concentration of \rm {C_2O_4}^{2-}in a 0.20 Msolution of oxalic acid.

**Express the molar concentration numerically using two significant figures.**

C2O42- = M