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AP Chemistry – Molarity and Titration – 35

Name _____Per ___

1. How many mL of a stock solution of 12.0 M HNO_3 would you have to use to prepare 0.500 L of 0.500 M HNO_3?

2. If you dilute 25.0 mL of the stock solution to a final volume of 0.500 L, what will be the concentration of the diluted solution?

3. Glycerol, $C_3H_8O_3$ is a water-soluble liquid with a density of 1.2656 g/mL at $15°^C$. Calculate the molarity of a solution of glycerol made by dissolving 50.000 mL glycerol at $15°^C$ in enough water to make 250.00 mL of solution.

4. What mass of NaOH is needed to precipitate all the Fe^{2+} ions from 25.0 mL of 0.500 M $Fe(NO_3)_2$ solution?

5. The distinctive odor of vinegar is due to acetic acid, $HC_2H_3O_2$. (a) Write the balanced chemical equation for the reaction of acetic acid with sodium hydroxide. (b) If 2.50 mL of vinegar needs 35.5 mL of 0.102 M NaOH to reach the equivalence point in a titration, what is the mass of acetic acid in a 1.00 L sample of this vinegar?

6. In an experiment 7.52 g of $Sr(NO_3)_2$ is dissolved in enough water to form 0.750 L. A 0.100 L sample is withdrawn from this stock solution and titrated with a 0.0425 M solution of Na_2CrO_4. What volume of Na_2CrO_4 solution is needed to precipitate all the $Sr^{2+}_{(aq)}$ as $SrCrO_4$?

7. A solution is made by mixing 12.0 g of NaOH and 75.0 mL of 0.200 M HNO_3. (a) Write a balanced equation for the reaction that occurs. (b) Calculate the concentration of each ion remaining in solution. (c) Is the resultant solution acidic or basic?