WW4: Exercise Set 2

January 19 2021

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17. Calculate the percentage concentration by mass of a solution prepared by dissolving 2.32 g of calcium chloride in 81 g of water.

    concentration = 2.86%

18. How many (grams) g of ammonium nitrate must be weighed out to make 415 g of a 58% by mass solution? In how many (milliliters) mL of water should it be dissolved?

    g = 240.7 g
    mL = 174.3 mL

19. A student weighs out a 4.8 g sample of aluminum bromide, transfers it to a 100 mL volumetric flask, add enough water to dissolve it, and then adds water to the 100 mL mark. What is the molarity of aluminum bromide in the resulting solution?

    M = 0.18 M

20. Large quantities of silver nitrate are used in making photographic chemicals. Find the mass that must be used in preparing 2.50×10^2 mL of 0.058 M silver nitrate.

    g = 2.46 g

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38. Calculate the freezing point of a solution of 2.12 g of naphthalene, $C_{10}H_8$, in 32.0 g of benzene, C_6H_6. Pure benzene freezes at 5.50C, and its K_f = 5.10C/m.

    $T_{f(solution)}$ = 2.86C

39. When 19.77 g of glucose, $C_6H_{12}O_6$ (180.2 g/mol), is dissolved in 225.6 g of an organic solvent, the freezing point of the resulting solution is 1.06C lower than that of the pure solvent. What is the molality of the solution? What is value of K_f for the solvent.

    m = 0.49 m
    K_f = 2.16C