CHM110H5F Final Exam– Practice Exam 2

Useful Information:

$R = 0.08206\ {}^{L \cdot atm}/_{mol \cdot K} = 8.314\ {}^{J}/_{mol \cdot K}$

$K_p = K_c(RT)^{\Delta n}$

$0\ °C = 273\ K$

$pH = pK_a + log\left(\frac{[A^-]}{[HA]}\right)$

$Roots\ of\ a\ quadratic\ ax^2 + bx + c = 0\ are\ x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$F = 96485.3 \frac{J}{mol \cdot V}$

Question 1 – A 37.64 g sample of an unknown organic compound containing only C, H, and O was burned in air to produce 105.6 g of CO_2 and 21.6 g of water. The compound was determined to have a molar mass of 94.11 g/mol. Determine the empirical and molecular formulas of the unknown compound.

Question 2 – Find the molarity, %w/w, and mole fraction of a 3.10 M solution of sodium bromide with a density of 1.31 g/mL.