(c) Suppose that during the experiment a significant but unknown amount of solvent evaporates from the test tube. What effect would this have on the calculated value of the molar mass of the solid (i.e., too large, too small, or no effect)? Justify your answer.

(d) Show the setup for the calculation of the percentage error in a student's result if the student obtains a value of 126 g mol^{-1} for the molar mass of the solid when the actual value is 120. g mol^{-1}.

(b) (i) The mass (g) of the unknown used must be found before hand using the balance. The amount of pure solvent must also be known in kg (which can be calculated from volume if the density is found). (in test tube)
ΔT is found by experiment: Heat the solution to 20°C w/ the hot-water bath; while recording time vs. temp. data (stopwatch + thermometer) cool the test tube by making an ice bath w/ the beaker to 0°C. The

(iii) ΔT is the difference between the experimental freezing-point + the pure freezing-point. Since $\Delta T = K_f \cdot$ molality

(ii) and ΔT, K_f are known molality, ($\frac{mol\ unknown}{kg\ solvent}$) can be calculated

m ($\frac{mol\ unknown}{kg\ solvent}$) • kg solvent = mol unknown

M.M. (molar mass) = $\frac{g\ of\ unknown}{mol\ of\ unknown}$.

(c) If some of the solvent evaporates, the experimental molality will be too large + so will the # of mol of unknown (calculated). $\Delta T = K_f \cdot \frac{g\ mol\ unite}{kg\ solvent}$

$\frac{mol}{kg} \cdot kg = mol \rightarrow \frac{g}{mol}$ smaller than should be ÷ in mol by less = more mol

The M.M. will be too small as there will be divided by more mol than there should be.

(d) % error = $\left| \frac{theoretical\ value - experimental\ value}{theoretical\ value} \right|$

= $\frac{120.\ g/mol - 126\ g/mol}{120\ g/mol}$ = $\frac{1}{20}$ = .05 = $\underline{5\%\ error}$