1. **STUDY CHECK**

A solution is prepared by mixing 1g of glucose (MW=180g/mol) in 50g of water to give a final volume of 100mL. Calculate: (a) The percent by mass of solute (b) The mole fraction of solute (c) The molarity of the solution (d) The molality of the solution (e) The density of the solution

2. **STUDY CHECK**

For a 0.11m glucose (MW=180g/mol) solution with density 0.51g/mL, calculate: (a) The percent by mass of solute (b) The mole fraction of solute (c) The molarity of the solution

3. **STUDY CHECK**

We prepare a solution by weighting 1g of solute and adding liquid until 100mL of solution in order to prepare a 2M solution. Calculate the molar mass of the solute.

4. **STUDY CHECK**

Break down the following chemicals into ions, if possible: $H_2O_{(l)}$, $NH_{3(l)}$, $AgNO_{3(aq)}$.

5. **STUDY CHECK**

The percent dissociation of a 0.1M weak electrolyte is 40%. Calculate the effective ion concentration.

6. **STUDY CHECK**

For a solution of 5 g of NaCl (MW=58g/mol) in 100 g of acetic acid, CH_3COOH: (a) Calculate its molality (b) Given that benzene boiling point is 118°C, and that k_b = 3.08 °C/m, calculate the boiling point and the boiling point elevation of the solution. (c) Given that benzene freezing point is 17°C, and that k_f = 3.59 °C/m, calculate the freezing point and the freezing point depression of the solution.

7. **STUDY CHECK**

Calculate the vapor-pressure lowering of a 3m I_2 (MW=254g/mol) solution in cyclohexane at 279K given that the vapor pressure of cyclohexane at that temperature is 5.164kPa and the solution density is 1.3g/mL.

8. **STUDY CHECK**

We prepare a 0.1M solution of a weak electrolyte with i=3. Given that the degree of dissociation of the electrolyte is 95%, calculate the osmotic pressure of the solution at 298K.

9. **STUDY CHECK**

We prepare a solution by adding 5g of of solute–a non-electrolyte–until filling 50mL of solution. The solution experience a boiling point elevation of 5.3°C. Given the boiling elevation constant of water, 1.86°C/m, calculate the molar mass of the solute.