

PROGRESS TEST 2

- 1) Which of the following solutions has the highest boiling point?
 - NaCl 0.1m
 - HCl 0.2m
 - K_2SO_4 0.1m
 - Glucose 0.2m
- 2) When does an osmotic equilibrium take place between two solutions separated by a semi-permeable membrane?
 - In case the two solutions have the same molar concentration
 - In case the two solutions have the same osmolar concentration
 - In case the two solutions have the same molality
 - In case the two solutions have the same ionic strength
- 3) How does the solubility of a gas into a liquid vary?
 - It is always the same for all the gases
 - it depends on the pressure of the gas over the liquid
 - it is independent of the solvent's nature
 - it is independent of the pressure of the gas over the liquid
- 4) Given the reaction: $N_2 + 3H_2 \rightleftharpoons 2NH_3$, how can this equilibrium be reached in a closed flask of 1L at 500°C?
 - Only if there are stoichiometric amounts of N_2 , H_2 and NH_3
 - In case there is only NH_3
 - in case there is only N_2
 - in case there is only H_2
- 5) On which parameter does K_c depend?
 - Pressure
 - Concentration of reagents
 - Temperature
 - None of the above
- 6) What is the molar concentration of a solution prepared by diluting with water 0.5ml of a commercial solution of ammonia (NH_3 , 30%w, $d=0.91g/ml$) up to a volume of 250ml?
- 7) 0.743g of a covalent compound are dissolved in 150ml of water at 15°C. This solution has $\pi=1.535atm$, calculate the formula weight of the compound.
- 8) 1L of a solution of glucose (FW=180) exerts $\pi =2.7atm$. Once 3g of NaCl (FW=58) are added to this solution, the osmotic pressure doubles. How many grams of glucose were in the first solution?
- 9) 2mol of PCl_5 are heated in a volume of 2L. At equilibrium, 40% of PCl_5 has dissociated in PCl_3 and Cl_2 . Calculate K_c .
 $PCl_5 \rightleftharpoons PCl_3 + Cl_2$
- 10) 3 mol of SO_2 and 1.5 mol of O_2 are mixed in an empty cylinder of 2L at 1350K. When the reaction $2SO_2 + O_2 \rightleftharpoons 2SO_3$ reaches the equilibrium, there are 0.9 mol of O_2 . Calculate K_c .