CHE 101 - Homework - Ch 9c

p. 316-321 **Solutions** Score: _____/60

Name: _____ Date: _____

[3 pt] 1. Will methane (CH_4) dissolve better in pentane ($CH_3CH_2CH_2CH_2CH_3$) or water (H_2O). Explain. 1. _____

[3 pt] 2. Will ethanol (CH_3CH_2OH) dissolve better in pentane ($CH_3CH_2CH_2CH_2CH_3$) or water (H_2O). Explain. 2. _____

[5 pt] 3. Draw a picture showing how water will orient around dissolved KCl molecules in a solution. Label all IMF's present.

[5 pt] 4. Draw a picture showing how a solution made from methane CH_4 and water H_2O would look. Label all IMF's present

[5 pt] 5. Using the information in Figure 14.4 (on CS) indicate whether the solution is Saturated(S), Unsaturated (U) or Super Saturated (SS).

(a) 25 grams of $CuSO_4$ at 20 ℃ 5(a) _____

(b) 55 grams of NH_4Cl at 70 ℃ 5(b) _____

(c) 30 grams of $KClO_3$ at 70 ℃ 5(c) _____

(d) 60 g of KNO_3 at 50 ℃ 5(d) _____

(e) 15 grams of $KClO_3$ at 10 ℃ 5(e) _____

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[4 pt] 6. Using Figure 14.4 at what temperature(s) (40 °C , 50 °C , 60 °C , 70 °C , or 80 °C) would you expect a solution made from 40 g of copper (II) sulfate and 100 g of water to be unsaturated. Explain. 6. _____

[4 pt] 7. Would a solution made by adding 3.0 grams of KCl to 10.0 mL of H_2O at 40 °C be unsaturated (U), saturated (S) or supersaturated (SS)? Explain. 7. _____

[4 pt] 8. Will a solution of 15.0 grams of $KClO_3$ in 35 mL of H_2O at 80 °C be unsaturated (U), saturated (S) or supersaturated (SS)? Explain. 8. _____

[4 pt] 9. Will a solution of 25.0 grams of NH_4Cl in 60 mL of H_2O at 4O °C be unsaturated (U), saturated (S) or supersaturated (SS)? Explain. 9. _____

[4 pt] 10. 100 mL of a saturated solution of KNO_3 at 50 °C is cooled to 10 °C . How many grams of KNO_3 will precipitate? Explain. 10. _____

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[4 pt] 11. What is the effect of temperature on the solubility of (1) gases in liquids, and (2) of solids in liquids. Explain.

[3 pt] 12. In a saturated solution containing undissolved solute, solute is continuously dissolving, but the concentration in the solution remains unchanged. Explain how this can occur.

[4 pt] 13. What is the effect of pressure on the solubility (amount dissolved) of (1) gases in liquids, and (2) of solids in liquids. Explain each proportionality.

[2 pt] 14. The rate at which a solid dissolves in a liquid is governed in what 4 ways?

(a)

(b)

(c)

(d)

[3 pt] 15. Explain why smaller particles dissolve faster than large particles.

[3 pt] 16. Why are reactions between solids very very slow compared to reactions between the solids that are dissolved in water (ie in solution)?