SHEET WORK CHEMISTRY الملف

Almanahj Website → American curriculum → 11th Grade → Physics → Term 1 → The file

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question

1) The process of solute particles being surrounded by solvent particles is known as _____. 1) _____

A) dehydration

B) agglutination

C) solvation

D) agglomeration

E) salutation

2) Pairs of liquids that will mix in all proportions are called _____ liquids. 2) _____

A) saturated

B) miscible

C) supersaturated

D) unsaturated

E) polar liquids

3) The solubility of oxygen gas in water at 25 °C and 1.0 atm pressure of oxygen is 0.041 g/L. The solubility of oxygen in water at 3.0 atm and 25 °C is _____ g/L. 3) _____

A) 0.014 B) 0.12 C) 0.041 D) 3.0 E) 0.31

4) The solubility of nitrogen gas in water at 25 °C and a nitrogen pressure of 1.0 atm is 6.9×10^{-4} M. The solubility of nitrogen in water at a nitrogen pressure of 0.80 atm is _____ M. 4) _____

A) 5.5×10^{-4} B) 0.80 C) 1.2×10^{3} D) 3.7×10^{-3} E) 8.6×10^{-4}

5) The solubility of Ar in water at 25 °C is 1.6×10^{-3} M when the pressure of the Ar above the solution is 1.0 atm. The solubility of Ar at a pressure of 2.5 atm is _____ M. 5) _____

A) 6.4×10^{-4} B) 4.0×10^{-3} C) 7.5×10^{-2} D) 1.6×10^{3} E) 1.6×10^{-3}

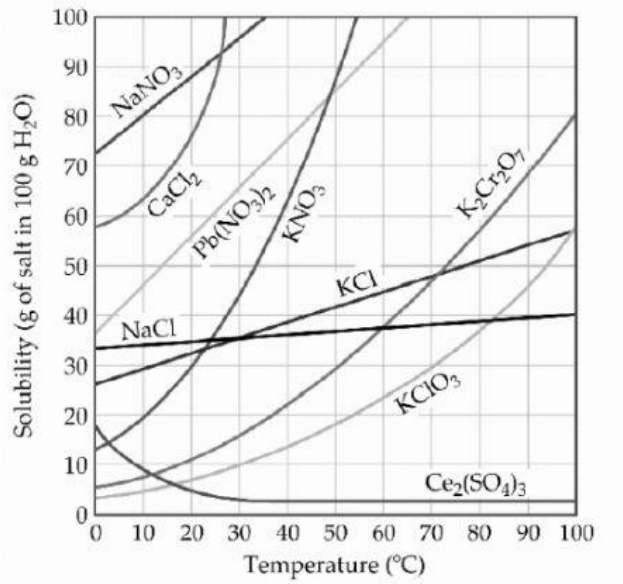
6) On a clear day at sea level, with a temperature of 25 °C, the partial pressure of N_2 in air is 0.78 atm and the concentration of nitrogen in water is 5.3×10^{-4} M. When the partial pressure of N_2 is _____ atm, the concentration in water is 1.1×10^{-3} M. 6) _____

A) 1.6 atm B) 1.0 atm C) 0.78 atm D) 2.1 atm E) 0.63 atm

7) Which one of the following vitamins is water soluble? 7) _____

A
B
K
D
E

A) A B) B C) K D) D E) E



8) A sample of potassium nitrate (49.0 g) is dissolved in 101 g of water at 100 °C, with precautions taken to avoid evaporation of any water. The solution is cooled to 30.0 °C and no precipitate is observed. This solution is _____. 8) _____

A) placated

B) hydrated

C) saturated

D) supersaturated

E) unsaturated

9) A sample of potassium chlorate (15.0 g) is dissolved in 201 g of water at 70 °C, with precautions taken to avoid evaporation of any water. The solution is cooled to 30.0 °C and no precipitate is observed. This solution is _____. 9) _____

A) saturated

B) supersaturated

C) miscible

D) hydrated

E) unsaturated

10) A sample of potassium nitrate (49.0 g) is dissolved in 101 g of water at 100 °C, with precautions taken to avoid evaporation of any water. The solution is cooled to 30.0 °C and a small amount of precipitate is observed. This solution is _____. 10) _____

A) unsaturated

B) supersaturated

C) hydrated

D) saturated

E) placated

11) The solubility of $MnSO_4$ monohydrate in water at 20 °C is 70.0 g per 100.0 mL of water. A solution at 20 °C that is 4.22 *M* in $MnSO_4$ monohydrate is best described as a(n) _____ solution. The formula weight of $MnSO_4$ monohydrate is 168.97 g/mol. 11) _____

A) saturated

B) unsaturated

C) supersaturated

D) solvated

E) hydrated

12) A solution is prepared by dissolving 23.7 g of $CaCl_2$ in 375 g of water. The density of the resulting solution is 1.05 g/mL. The concentration of $CaCl_2$ is _____% by mass. 12) _____

A) 5.94 B) 6.24 C) 0.0594 D) 6.32 E) 0.0632

13) The concentration of urea in a solution prepared by dissolving 16 g of urea in 39 g of H_2O is _____% by mass. The molar mass of urea is 60.0 g/mol. 13) _____

A) 29 B) 41 C) 0.41 D) 0.48 E) 0.29

14) The concentration of nitrate ion in a solution that contains 0.900 M aluminum nitrate is _____ M. 14) _____

A) 0.450 B) 0.300 C) 2.70 D) 1.80 E) 0.900

15) The concentration of KBr in a solution prepared by dissolving 2.21 g of KBr in 897 g of water is _____ molal. 15) _____

A) 2.46

B) 0.0186

C) 2.07×10^{-5}

D) 0.0167

E) 0.0207

16) The concentration of lead nitrate ($Pb(NO_3)_2$) in a 0.726 M solution is _____ molal. The density of the solution is 1.202 g/mL. 16) _____

A) 0.650 B) 1.928 C) 0.819 D) 0.476 E) 0.755

17) The concentration of a benzene solution prepared by mixing 12.0 g C_6H_6 with 38.0 g CCl_4 is _____ molal. 17) _____

A) 0.316 B) 4.04 C) 0.508 D) 0.240 E) 0.622

18) A solution is prepared by dissolving 15.0 g of NH_3 in 250 g of water. The density of the resulting solution is 0.974 g/mL. The mole fraction of NH_3 in the solution is _____. 18) _____

A) 0.940 B) 0.0640 C) 16.8 D) 0.0597 E) 0.922

19) A solution is prepared by dissolving 15.0 g of NH_3 in 250 g of water. The density of the resulting solution is 0.974 g/mL. The molarity of NH_3 in the solution is _____. 19) _____

A) 3.24 B) 0.00353 C) 3.53 D) 0.882 E) 60.0

20) A solution is prepared by dissolving 23.7 g of $CaCl_2$ in 375 g of water. The density of the resulting solution is 1.05 g/mL. The concentration of Cl^- in this solution is _____ M. 20) _____

A) 1.20

B) 0.562

C) 6.64×10^{-2}

D) 0.214

E) 1.12

21) A solution is prepared by dissolving 23.7 g of $CaCl_2$ in 375 g of water. The density of the resulting solution is 1.05 g/mL. The concentration of $CaCl_2$ in this solution is _____ molal. 21) _____

A) 5.70 B) 1.76 C) 0.569 D) 0.214 E) 63.2

22) The concentration of HCl in a solution that is prepared by dissolving 5.5 g of HCl in200 g of C_2H_6O is _____ molal. 22) _____

A) 7.5×10^{-4} B) 0.75 C) 1.3 D) 27.5 E) 3.3×10^{-2}

23) The concentration (M) of HCl in a solution prepared by dissolving 5.5 g of HCl in 200 g of C_2H_6O is _____ M. The density of the solution is 0.79 g/mL. 23) _____

A) 21 B) 0.93 C) 6.0×10^{-4} D) 1.72 E) 0.58

24) The mole fraction of He in a gaseous solution prepared from 4.0 g of He, 6.5 g of Ar, and 10.0 g of Ne is _____. 24) _____

A) 0.20 B) 0.86 C) 1.5 D) 0.11 E) 0.61

25) The mole fraction of urea (MW = 60.0 g/mol) in a solution prepared by dissolving 16 g of urea in 39 g of H_2O is _____. 25) _____

A) 0.37 B) 0.58 C) 0.13 D) 0.11 E) 9.1

26) The concentration of urea (MW = 60.0 g/mol) in a solution prepared by dissolving 16 g of urea in 39 g of H_2O is _____ molal. 26) _____

A) 6.9 B) 96 C) 0.11 D) 6.3 E) 0.68

27) The molarity of urea in a solution prepared by dissolving 16 g of urea (MW = 60.0 g/mol) in 39 g of H_2O is _____ M. The density of the solution is 1.3 g/mL. 27) _____

A) 0.11 B) 6.8 C) 3.7 D) 0.16 E) 6.3

28) What is the molarity of sodium chloride in solution that is 13.0% by mass sodium chloride and that has a density of 1.10 g/mL? 28) _____

A) 143

B) 2.23

C) 2.45

D) 1.43×10^{-2}

E) 2.56

29) The concentration of sodium chloride in an aqueous solution that is 2.23 M and that has a density of 1.01 g/mL is _____% by mass. 29) _____

A) 45.3 B) 12.9 C) 10.1 D) 2.21 E) 7.83

30) The vapor pressure of pure ethanol at 60 °C is 0.459 atm. Raoult's Law predicts that a solution prepared by dissolving 10.0 mmol naphthalene (nonvolatile) in 90.0 mmol ethanol will have a vapor pressure of _____ atm. 30) _____

A) 0.0918 B) 0.498 C) 0.790 D) 0.367 E) 0.413

31) The vapor pressure of pure water at 25 °C is 23.8 torr. What is the vapor pressure (torr) of water above a solution prepared by dissolving 18.0 g of glucose (a nonelectrolyte, MW = 180.0 g/mol) in 95.0 g of water? 31) _____

A) 23.4 B) 24.3 C) 0.451 D) 0.443 E) 23.8

32) The vapor pressure of pure water at 25 °C is 23.8 torr. Determine the vapor pressure (torr) of water at 25 °C above a solution prepared by dissolving 35 g of urea (a nonvolatile, non-electrolyte, MW = 60.0 g/mol) in 75 g of water. 32) _____

A) 0.88 B) 3.3 C) 21 D) 27 E) 2.9

33) The freezing point of ethanol (C_2H_5OH) is -114.6 °C. The molal freezing point depression constant for ethanol is 2.00 °C/m. What is the freezing point (°C) of a solution prepared by dissolving 50.0 g of glycerin ($C_3H_8O_3$, a nonelectrolyte) in 200 g of ethanol? 33) _____

A) -114.6 B) -115 C) -120.0 D) -132.3 E) -5.42

34) What is the freezing point (°C) of a solution prepared by dissolving 11.3 g of $Ca(NO_3)_2$ (formula weight = 164 g/mol) in 115 g of water? The molal freezing point depression constant for water is 1.86 °C/m. 34) _____

A) -3.34 B) -1.11 C) 3.34 D) 1.11 E) 0.00

35) A solution containing 10.0 g of an unknown liquid and 90.0 g water has a freezing point of -3.33 °C. Given K_f = 1.86 °C/m for water, the molar mass of the unknown liquid is _____ g/mol. 35) _____

A) 619 B) 333 C) 69.0 D) 62.1 E) 161

36) A solution is prepared by dissolving 0.60 g of nicotine (a nonelectrolyte) in water to make 12 mL of solution. The osmotic pressure of the solution is 7.55 atm at 25 °C. The molecular weight of nicotine is _____ g/mol. 36) _____

A) 160 B) 28 C) 43 D) 50 E) 0.60

37) A solution is prepared by dissolving 6.00 g of an unknown nonelectrolyte in enough water to make 1.00 L of solution. The osmotic pressure of this solution is 0.750 atm at 25.0 °C. What is the molecular weight (g/mol) of the unknown solute? 37) _____

A) 30.6

B) 195

C) 16.4

D) 110

E) 5.12×10^{-3}

38) Calculate the freezing point (0°C) of a 0.05500 m aqueous solution of glucose. The molal freezing-point-depression constant of water is 1.86 °C/m. 38) _____

A) -0.2046 B) 0.0286 C) -0.1023 D) 0.1023 E) -0.05627

39) Calculate the freezing point (0°C) of a 0.05500 m aqueous solution of $NaNO_3$. The molal freezing-point-depression constant of water is 1.86 °C/m. 39) _____

A) -0.2046 B) 0.0286 C) 0.1023 D) -0.1023 E) -0.05627

40) An aqueous solution of a soluble compound (a nonelectrolyte) is prepared by dissolving 33.2 g of the compound in sufficient water to form 250 mL of solution. The solution has an osmotic pressure of 1.2 atm at 25 °C. What is the molar mass (g/mL) of the compound? 40) _____

A) 2.3×10^2 B) 1.0×10^3 C) 6.8×10^2 D) 2.7×10^3 E) 28

41) A 0.15 m aqueous solution of a weak acid has a freezing point of –0.31 °C. What is the percent ionization of this weak acid at this concentration? The molal freezing-point-depression constant of water is 1.86 °C/m. 41) _____

A) 35 B) 31 C) 11 D) 89 E) 17

42) Determine the fraction of ionization of HX if a solution prepared by dissolving 0.020 mol of HX in 115 g of water freezes at –0.47 °C. The molal freezing-point-depression constant of water is 1.86 °C/m. 42) _____

A) 1.45 B) 0.044 C) 0.30 D) 0.45 E) 0.348

43) Determine the freezing point (°C) of a 0.015 molal aqueous solution of $MgSO_4$. Assume i = 2.0 for $MgSO_4$. The molal freezing-point-depression constant of water is 1.86 °C/m. 43) _____

A) 0.000 B) –0.028 C) –0.056 D) –0.084 E) –0.17

44) A solution is prepared by dissolving 2.60 g of a strong electrolyte (formula weight = 101 g/mol) in enough water to make 1.00 L of solution. The osmotic pressure of the solution is 1.25 atm at 25.0 °C. What is the van't Hoff factor (i) for the unknown solute? 44) _____

A) 0 B) 0.99 C) 1.98 D) 2.98 E) 0.630

45) George is making spaghetti for dinner. He places 4.01 kg of water in a pan and brings it to a boil. Before adding the pasta, he adds 58 g of table salt to the water and again brings it to a boil. The temperature of the salty, boiling water is _____°C. 45) _____

It is a nice day at sea level so that pressure is 1.00 atm. Assume negligible evaporation of water. K_b for water is 0.52°C/*m*.

A) 100.26 B) 100.00 C) 100.13 D) 99.74 E) 99.87