بسم الله الرحمن الرحيم

Chem103-Qusoor questions-second

لجنة الصيدلة

راية للخير وفارس لن يترجل

1) the most polar covalent bond would form in which of these pairs:

a)Al-I b) P-Cl c) Si-Cl d) O-F

2) Which of these atoms is the *least* electronegative

a)Cs b) Li c) P d) As

3) Which of the following concentrations is temperature independent?

I. Molality II. Molarity III. Mole fraction

a. I only
b. II only
c. III only
d. I and III only

4) In which of these pairs of atoms would the bond have the greatest percent ionic character (i.e., most polar)?

a) O-F b) N-F c) C-F d) Cl-F

5) Colligative properties, properties that depends on:

a) Amount of solvent b) nature of solute
c) Amount of solution d) Amount of solute

6) At what temperature a 7% by mass aqueous solution of ethylene glycol (62g/mol), a nonelectrolyte, will freeze? (for H_2O, $T_f = 0\ ^\circ C$, $K_f = 1.86\ ^\circ C/m$)

a) 1.13 °C b) -1.13 °C c) 2.26 °C d) – 2.26 °C

7) The molality of lead nitrate in 0.726M $Pb(NO_3)_2$ (331g/mol, d = 1.202g/ml) solution:

a) 0.755m b) 1.928m c) 0.476 d) 0.819m

8) A solution was prepared by dissolving 3 g of unknown solute in enough water to make 0.5L solution. The osmotic pressure of this solution was 1 atm at 25°C. the molar mass (g/mol) of this unknown:

a) 392 b) 196 c) 147 d) 294

9)A solution was prepared by dissolving 15.6g of $CaBr_2$ (199.8g/mol), strong electrolyte, in 375g water. The density of the resulting solution was 1.04g/mL. the molarity of Br^- in this solution is:

a) 0.347M b) 0.748M c) 0.208M d) 0.416M

10) One of the following solutions has the lowest freezing point:

a) 0.30m $MgCl_2$
b) 0.60m glucose
c) 0.24m $FeCl_3$
d) 0.50m KF

11) During osmosis:

a) Solutes pass through a membrane but solvent does not
b) Solvent and solute both diffuse at the same time through a membrane
c) Solvent pass through a membrane but solutes do not
d) Gases diffuse through a membrane into a solution and build up pressure

12)The solution (0.2 m) that has the highest boiling point is :

a) KCl b) $C_6H_{12}O_6$ c) Na_2SO_4 d) NaCl

13)A solution is said to contain 28% H_3PO_4 acid by mass. This means:

a) 1mL of this solution contains 28g of the acid
b) 1L of this solution has a mass of 28g
c) 100g of this solution contains 28g of the acid
d) The density of this solution is 2.8g/mL

14)Molarity of phosphoric acid (82g/mol) in a solution that is 84% phosphoric acid and has a density of 1.87g/mL is:

a) 12M b) 14M c) 19M d) 21M

15)How many grams of glycerol (92g/mol) should be added to 60 g of water to decrease freezing point of solution to -2.5 °C. (for H_2O, T_f= 0°C, K_f = 1.86 °C/m)

a) 9.9 b) 7.4 c) 4.9 d) 12.4

16)The molality of KBr solution made by dissolving 2.21g KBr (119g/mol) in 897g of water is:

a) 2.46 m b) 0.0167 m c) 0.0207 m d) 2.07×10^{-5} m

17)Calculate the mass of 30 ppm NaCl solute that must dissolve in 200g solution

a) 6×10^{-3} g b) 6×10^{-6} g c) 1.5×10^{-6} g d) 3×10^{-3} g

18)In which of the following molecule the carbon-carbon distance shorter:

a) $H_2C=CH_2$ b) H_3C-CH_3

c) $H_3C-CH_2-CH_3$ d) H-C≡C-H

19)Which one of the following bonds would be the least polar:

a) Na-S b) P-S c) C-F d) Si-Cl

20)Of the bonds C-N, C=N and C≡N, the C-N bond is

a) strongest/ shortest b) strongest/ longest

c) weakest/ longest d) weakest/ shortest

21) How many grams of glycerol (92.1g/mol) that must be dissolved in 520 g of water to raise the boiling point to 102 °C, (K_b=0.512°C/m)?

a) 92 g b) 135 g c) 187 g d) 526 g

22)A solution is prepared by dissolving 15 g of KF (58 g/mol), in 80 g water (18g/mol), what is the vapor pressure of solution?(P_{water} at 25°C is 23.8 mmHg)

a) 45 b) 22.5 c) 2.6 d) 1.3

23) A 44 g of unknown solute was added to 250 g of pure water. The freezing point was decreased to 3.5°C. The molar mass of the solute ($K_f = 1.86°C/m$):

a) 99.1 b) 86.3 c) 89.7 d) 93.5

24) The value of Van't Hoff factor (*i*) in $C_6H_{12}O_6$ is:

a) 0 b) 1 c) 2 d) 3

25) How many grams of ethylene glycol (62g/mol), per 3.5 Kg of water are needed to give protection against freezing down to -2 °C. ($K_f = 1.86°C/m$):

a) 300 b) 200 c) 233 d) 267

26) A solution is prepared by dissolving 35 mg of KCl to give 390 g water, calculate its concentration in part per billion (ppb):

a) 145 b) 90 c) 90×10^3 d) 145×10^3

27) What is happened in covalent bond:

a) loss of electrons
b) gains electrons
c) sharing of electrons
d) a & b are correct

28) Calculate the Molarity of 40 ppm $AgNO_3$ (170 g/mol) solution?

a) 2.35×10^{-4} M b) 235×10^{-3} c) 235×10^3 d) 235×10^4

29) Calculate the ppm concentration of 4.6×10^{-3} M of NaCl (58.5 g/mol)?

a) 217 mg/l b) 456 mg/l c) 269 mg/l d) 313 mg/l

30) Ion pair effect will:

a) increase Van't Hoff factor
b) increase molality
c) reduce Van't Hoff factor
d) reduce molality

31) What is the molar mass of a compound if 4.28 g of the unknown compound is dissolved in 25.0 g of $CHCl_3$ solvent a solution which boils at 64.0 °C? The boiling point of pure $CHCl_3$ is 61.7 °C and $K_b = 3.63$ °C/m

a. 135 g/mol
b. 270 g/mol
c. 168 g/mol
d. 67.5 g/mol

32) What is the concentration in ppm of a 1.5×10^{-3} molal solution of NaOH (M. mass=40 g/mol)

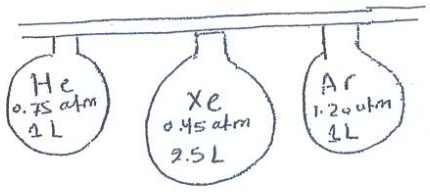
a. 60 ppm
b. 1.5 ppm
c. 150 ppm
d. 6.0 ppm

33) Which of the following aqueous solutions would be expected to have the highest vapor pressure lowering?

a. 0.1 m NaCl
b. 0.1 m$MgCl_2$
c. 0.05 m $Al_2(SO_4)_3$
d. 0.15 m $C_6H_{12}O_6$

34) Consider the apparatus to the right. When three valves connecting the three containers are opened and the gases are allowed to mix at 25°C, what is the partial pressure of Xe? Assume the temperature remains constant and neglect the volume of the connecting tube.

a. 0.17 atm
b. 0.25 atm
c. 0.19 atm
d. 0.45 atm



35)How many grams of ethylene glycol $C_2H_6O_2$ (M. mass = 62 g/mol) must be added to 0.138 kg of H2O to decrease the freezing point by 5.0 °C? K_f for H_2O = 1.86 m/°C.

a. 166.7 g
b. 0.043 g
c. 62 g
d. 23 g

36) Which one of the following would have the smallest polarity? (i.e. lowest percent ionic character?

a. F-O
b. F-N
c. F-S
d. F-P

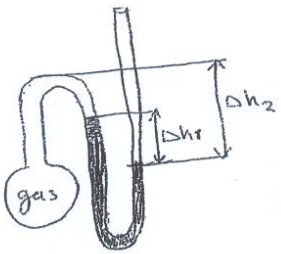
7	8	9	10
N	O	F	Ne
14	16	19	20.2
15	16	17	18
P	S	Cl	Ar
30.1	32.0	35.5	39.9

37) If it takes 10.0 seconds for a volume of $F_{2\,(g)}$ to escape (effuse) from a hole in a container, how long will it take for an equal volume of $Ne_{(g)}$ to escape from the same hole?

a. 13.7 s
b. 7.29 s
c. 9.70 s
d. 10.31 s

38) Consider the apparatus shown to the right. Which of the following is correct?

a. $P_{atm} = P_{gas} + \Delta h_1$
b. $P_{gas} = P_{atm} + \Delta h_1$
c. $P_{gas} = P_{atm} + \Delta h_2$
d. $P_{atm} = P_{gas} + \Delta h_2 - \Delta h_1$



39) Calculate the molar volume for an ideal gas at 127˚C and 2.0 atm.

a. 22.4 L
b. 32.8 L
c. 16.4 L
d. 5.2 L

40) What are the standard temperature and pressure (STP)?

a. 0˚C , 1 torr
b. 25 ˚C , 1 torr
c. 0 ˚C , 1 atm
d. 25 ˚C , 1 atm

Key

Question Number	Answer	Question Number	Answer
1	A	21	C
2	A	22	B
3	D	23	D
4	C	24	B
5	D	25	C
6	D	26	C
7	A	27	C
8	C	28	A
9	D	29	C
10	D	30	C
11	C	31	B
12	C	32	A
13	C	33	D
14	C	34	B
15	B	35	D
16	C	36	A
17	A	37	B
18	D	38	A
19	B	39	C
20	C	40	C

للاستفسار عن الإجابات :-

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