Chemistry

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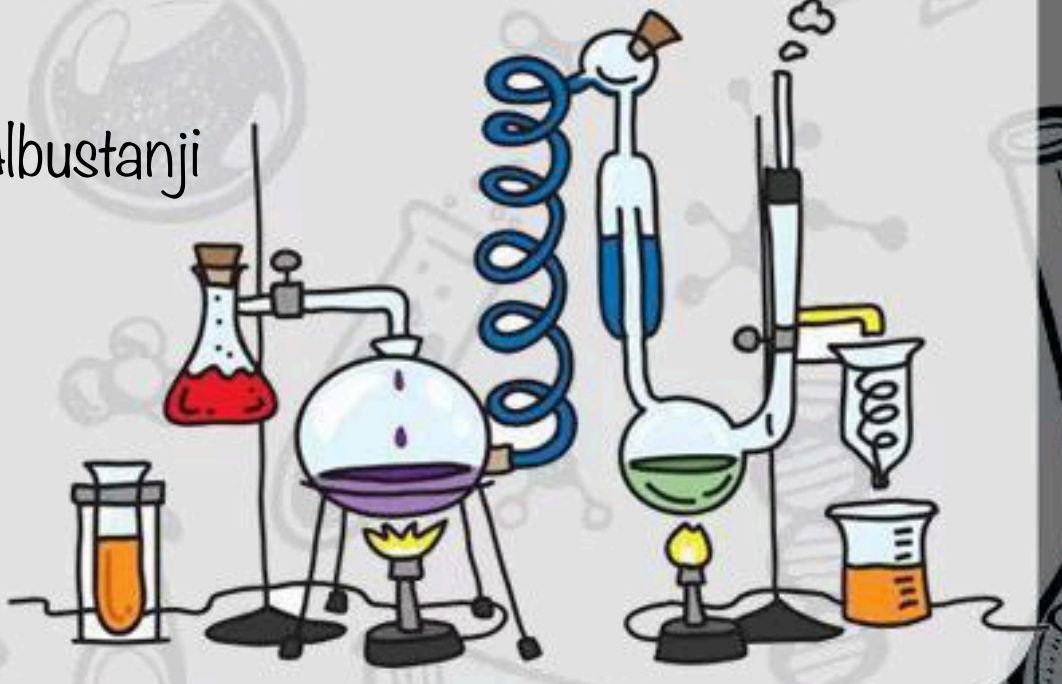

A solution of 62.4 g of an unknown compound was dissolved in enough water to make 1.000 L of solution has an osmotic pressure of 232 torr at 25 °C. Based on these data, what is the molar mass of the compound?
(R = 0.0821
L.atm/mol.K) (1 atm = 760 torr)
1. 05001 g/mol
2. 06.6 g/mol
3. 0420 g/mol
4. 07570 g/mol

Determine the pH of a 0.15 M aqueous solution of NaClO.
For hypochlorous acid (HClO), Ka = 3.0 x 10-8.
1. 010.11
2. 09.83
3. 010.35
4. 03.65
5. 04.17

In which of the following aqueous solutions does the weak acid have the lowest percentage ionization?

1. 00.01 M HCN ($K_a = 6.2 \times 10^{-10}$)
2. 00.01 M HNO_2 ($K_a = 4.0 \times 10^{4}$)
3. 00.01 M HOC1 ($K_a = 3.5 \times 10^{-8}$)
4. 00.01 M HCHO, ($K_a = 1.8 \times 10^{4}$)
5. 00.01 M H_2CO_3; ($K_a = 4.5 \times 10^{-7}$)

For the reaction

$H_2(g) + Br_2(g) \rightleftharpoons 2\,HBr(g)$

A mixture of 0.70 M of H, and 0.40 M of Br, is combined in a reaction container at 700 K. If at equilibrium, at 700 K, there are 0.55 M of H_2 present. What is Br_2 concentration at equilibrium?

1. 00.10 M
2. 00.15 M
3. 00.35 M
4. 00.20 M
5. 00.25 M

At a given temperature the vapor pressures of benzene and toluene are 183 mm Hg and 60.0 mm Hg, respectively. Calculate the total vapor pressure over a solution of benzene and toluene with Xbenzene (mole fraction) = 0.58.

1. O121 mm Hg
2. 0131 mm Hg
3. 0242 mm Hg
4. O 110 mm Hg

The pH of a 0.55 M aqueous solution of the weak acid, HA, at 25.0 °C is 4.48. What is the value of Ka for HA

1. 03.0 x 104
2. 03.3 x 10-5
3. 02.0 x 10-9
4. 01.1 x 10-9
5. 06.0 x 10-5

Which of the following statements is true about reaction quotient (Q)?

1. O The reaction shifts left toward the reactants when Q < Keq
2. O The reaction is at equilibrium when Q < Keq
3. O At equilibrium, the reaction quotient always equals 1
4. • The reaction shifts right toward the products when Q ≤ Keq
5. OQ does not depend on the concentrations or partial pressures of reaction components

Kp = 0.0198 at 721 K for the reaction
2 HI(g) ⇄ H2 (g) + 12(g)
In a particular experiment, the partial pressures of Ha
and I, at equilibrium are 0.678 and 0:788 atm, respectively. The partial pressure of HI at equilibrium is

00.0106 .1
07.87 .2
00.103 .3
027.0 .4
05.19 .5

The Keg for the equilibrium below is 5.65 x 10-3 at 380.0 °C.
2 C(g) + 2 H, 0(g) 74 HCK(g) + 02(g)
What
is the value of Keg at this temperature for the following reaction?
4 HCI(g) + 02(g) 72 Cl(g) + 2 H,0(g)
1. 07.52 x 10-2
2. 0-7.52 x 10-2

10-3 × 05.66 .3

4. 01.77 x 102
5. 01.50 x 10-1

Calculate the freezing point of a solution containing 20 grams of KCl and 2200.0 grams of water.
KC1 molar mass = 74.55 g/mol.
The molal-freezing-point-depression constant (K) for water is 1.86 °C/m.
1. 0+0.23 °C

.2

0-0.23 °C

.3

0-0.45 °C
4. . 01.23 °C

.5

0+0.45 °C

When a non-volatile non-electrolyte solute is added to a volatile solvent, _

1. Othe freezing point of the solvent will decrease.
2. O the boiling point of the solvent will decrease.
3. the vapor pressure of the solvent will increase.
4. Oboth freezing and boiling points will increase.
5. Othe vapor pressure of the solvent will stay the same.

An aqueous solution of.....will produce a basic solution.

1. ONHAC1
2. ONaNO3
3. OKC1
4. •Ba (C104)2
5. OKNO2