- Order the intermolecular forces(dipole-dipole, London dispersion, ionic and hydrogen-bonding)from weakest to strongest

1- London dispersion , dipole-dipole ,hydrogen-bonding ,ionic
2- Dipole –dipole, London dispersion ,ionic and hydrogen bonding
3- hydrogen bonding ,dipole-dipole, London dispersion and ionic
4- dipole-dipole, ionic, London dispersion and hydrogen bonding
5- London dispersion, ionic, dipole-dipole and hydrogen bonding

- For the galvanic cell reaction, expressed below using shorthand notation, what half-reaction occurs at the cathode?$Zn_{(s)}|Zn^{2-}_{(aq)}||Fe^{2-}_{(aq)}|Fe_{(s)}$

1-$Zn_{(2)} \longrightarrow Zn^{2+}_{(aq)} +2e^-$

2- $^{Zn2+}{}_{(aq)} +2e^- \longrightarrow Zn_{(s)}$

3- $Fe^{2+}_{(aq)}+2e^- \longrightarrow Fe_{(s)}$

4- $Fe_{(s)} \longrightarrow Fe^{2+}_{(aq)} + 2e^-$

| Haelf-raction | E °(V) |
|---|---|
| $Cr^{3+}_{(aq)}+3e^- \longrightarrow Cr_{(s)}$ | -0.74 |
| $Cr^{3+}_{(aq)}+3e^- \longrightarrow Fe_{(s)}$ | -0.440 |
| $Cr^{3+}_{(aq)}+3e^- \longrightarrow Cr_{(s)}$ | +0.771 |
| $Sn^{4+}_{(aq)} +2e^- \longrightarrow Sn^{2+}_{(aq)}$ | +0.154 |

- Using the table above , the standard cell potential (E °cell ) for the galvanic cell based on the reaction below is $3Sn^{4+}_{(aq)}+2Cr_{(s)} \longrightarrow 2Cr^{4+}_{(aq)}+3Sn^{2+}_{(aq)}$

1. +2.53
2. -1.02
3. +0.89
4. +1.94
5. -0.59

- Calculate the work for the expansion of $CO_2$ from 1.0 to 2.9 liters aginst a pressure of 1.0 atm at constant temperature.

1. -1.9 liter atm
2. 1.9 liter atm
3. 2.9 liter atm
4 . 0
5. -2.9 liter atm

Find the value if the equilibriam constant (k) (at 500 C) for $N_{2\,(g)} + 3H_{2\,(g)} \longrightarrow 2NH_{3(g)}$ the value for $K_p$ at 500 C is 1.5 $*10^{-5}$ (R -0.0821 atm /Kmol-8,114 J/kmol )

1. $7.5*10^{-2}$
2. $1.3*10^{-2}$
3. $9.6*10^{-3}$
4. $6.0*10^{-2}$
5. $2.5*10^{-2}$

For nitrous acid $HNO_2$, Ka= $4.0*10^{-4}$ . Calculate the PH of 0.68 M $HNO_2$

1.1.78
2.0.17
3.3.57
4.12.22
5.non of the these

A substance contains 35.0 g nitrogen, 5.05 g hydrogen, and 60.0 g of oxygen , how many grams of hydrogen are there in a 156 g sample of this substance ? (Molar mass of N,H and O are 14,1 and 16 g/mol )

1. 15.7 g
2.5.05 g
3.30.9g
4. 7.87 g
5. 782 g

one molecular of a compound weight $2.13*10^{-22}$g .Its molar mass is

1. 20 g/ mol
2. 72 g/ mol
3. 150 g/ mol
4. 128 g/ mol
5 190 g / mol

the normal boiling point of liquid X is less than that of Y, which is less than of Z , which of the following is the correct order of increasing vapor pressure of the three liquid at 57P

1. X<Y<Z
2. Y
3.X
4.Z<Y<X
5.Y<Z<X

Exactly 235.4 J will raise the temperate of 10.0 g of a metal from 25.0 °C to 60.0 °C . What is the specific beat capacity of the metal ?

1. 1.49 J/g $_o$ C
2.13.1 J/g $_o$C
3. 0.673 J/g $_o$C
4.56.3 J/g $_o$C
5. Non of the these

Consider the reaction $H_2+I_2 \longleftrightarrow$ 2HI whose K=3.12 at a high temperature. If an equal amount of reactant gives the concentration of the product to be 0.50 M at equilibrium, determine the equilibrium concentration of the $H_2$ .

1. 1.3*10?1M
2.4.5*$10^{-2}$M
3. 9.0 *$10^{-2}$M
4.1.1 *10-1 M
5. 8.0*$10^{-3}$ M

2.50 mol NOCL was place in a 2.50 L reaction vessel at 750 °C .After equilibrium was established, it was found that 28%of NOCL had dissociated according to the equation

$2NOCL_{(g)} \longrightarrow 2NO_{(g)}+CL_{2\,(g)}$. Calculate the equilibrium constant ,$K_p$, for the reaction .

1. 1.17
2. 0.039
3.0.016
4. 26
5. 1.78

Order the following in increasing rate of effusion :$F_2$ ,$CL_2$,NO, $NO_2$,$CH_4$.

1.$CH_4$<$NO_2$<NO<$F_2$<$CL_2$

2.$CL_2$<$F_2$<$NO_2$<$CH_4$<NO

3.$CL_2$<$NO_2$<$F_2$<NO<$CH_4$

4.$CH_4$<NO<$F_2$<$NO_2$<$CL_2$

5.$F_2$<NO<$CL_2$<$NO_2$<$CH_4$

A sample of hydrogen gas was collected over water at 21°C and 685 mmHg. The volume of the container was 9.40 L . Calculate the mass of $H_2$(g) collected (Vapor pressure of water 18.6 mmHg at 21°C )

1.0.283 g

2.0.572 g

3.0.589g

4.0.683g

5.435 g