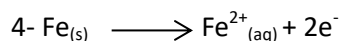
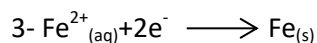
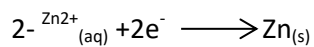
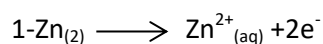


- Order the intermolecular forces(dipole-dipole, London dispersion, ionic and hydrogen-bonding)from weakest to strongest

- 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? $Zn_{(s)}|Zn^{2+}_{(aq)}||Fe^{2+}_{(aq)}|Fe_{(s)}$



Half-reaction	$E^{\circ}(V)$
$Cr^{3+}_{(aq)} + 3e^{-} \longrightarrow Cr_{(s)}$	-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 ( $E^{\circ}_{cell}$ ) 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 against 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 equilibrium constant (k) (at 500 C) for  $\text{N}_2(\text{g}) + 3\text{H}_2(\text{g})$   
 $K_p$  at 500 C is  $1.5 \times 10^{-5}$  (R = 0.0821 atm /Kmol-8,114 J/kmol )

→  
 $2\text{NH}_3(\text{g})$  the value for

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

For nitrous acid  $\text{HNO}_2$ ,  $K_a = 4.0 \times 10^{-4}$ . Calculate the PH of 0.68 M  $\text{HNO}_2$

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  $2.13 \times 10^{-22}$ 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 °C
2. 13.1 J/g °C
3. 0.673 J/g °C
4. 56.3 J/g °C
5. Non of the these

Consider the reaction  $H_2 + I_2 \rightleftharpoons 2HI$  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.  $1.3 \times 10^{-1} M$
2.  $4.5 \times 10^{-2} M$
3.  $9.0 \times 10^{-2} M$
4.  $1.1 \times 10^{-1} M$
5.  $8.0 \times 10^{-3} M$

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<sub>2</sub> ,Cl<sub>2</sub>,NO, NO<sub>2</sub>,CH<sub>4</sub>.

- 1.CH<sub>4</sub><NO<sub>2</sub><NO<F<sub>2</sub><Cl<sub>2</sub>
- 2.Cl<sub>2</sub><F<sub>2</sub><NO<sub>2</sub><CH<sub>4</sub><NO
- 3.Cl<sub>2</sub><NO<sub>2</sub><F<sub>2</sub><NO<CH<sub>4</sub>
- 4.CH<sub>4</sub><NO<F<sub>2</sub><NO<sub>2</sub><Cl<sub>2</sub>
- 5.F<sub>2</sub><NO<Cl<sub>2</sub><NO<sub>2</sub><CH<sub>4</sub>

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<sub>2</sub>(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

