**CHEMISTRY FOR ENGINEERS**

**ASSIGNMENT 3**

MULTIPLE CHOICE QUESTIONS (10pts)

1. B
2. B.
3. D
4. C
5. B
6. D. Since these 2 ion still remain in solution after reaction is finish (NEED CHECK)
7. C. K have oxidation number is +1 each, O have oxidation number is -2, we have:
8. D. At standard condition, dame volume have same amount of gas mole which equal number of gas molecule presented.
9. A.
10. C

CONSTRUCTED QUESTIONS (90pts)

1. Number of carbon is:

Based on reaction equation we have:

The mass of CaC2 produced is:

2. CH2ON2 + O2 🡪 CO2 + H2O + N2
3. Cu + Cl2 🡪 CuCl2
4. 2H3PO4 + 3Ba(OH)2 🡪 Ba3(PO4)2(s) + 6H2O
5. 6FeCl2 + 3H2SO4 + 2HNO3 🡪 Fe2(SO4)3 + 4FeCl3 + 2NO + 4H2O
6. H2O + SO3 🡪 H2SO4
7. We will consider 4 substances first by it intermolecular interaction strength:

\_ The upper left substance have no other interaction except London force which is the weakest one since it is a nonpolar molecule.

\_ The lower right are polar and can interact with other same molecule by dipole – dipole interaction.

\_ 2 remaining substances can interact by hydrogen bonding since it have OH functional group which is strongest intermolecular interaction. Between these 2, the upper right one is stronger since it have 2 OH which can form more hydrogen interaction compare to lower left one.

Sine the stronger solubility can cause by stronger intermolecular interaction, the ranking should be:

Upper left < lower right < lower left < upper right

2. Solid
3. Intermolecular force
4. Liquid
5. Gas
6. The temperature
7. Intermolecular force

The number of mole of potassium bicarbonate is:

According to reaction equation we have:

Volume of gas produced by reaction is:

1. The concentration of CO2 is:
2. We have the ideal gas law:

From this equation we learnt that:

\_ Boyle’s law

\_ Charles’s law

\_ Avogadro’s law

1. Physical Property of Gas:

* Gases assume the volume and shape of their containers.
* Gases are the most compressible state of matter.
* Gases will mix evenly and completely when confined to the same container.
* Gases have much lower densities than liquids and solids.

Chemical Property of Gas:

* Molecule Spacing: Far apart
* Molecule Movement: Very Quick and random movement of molecule
* Molecule Bonding: Very loose bonding
* Expansion: Most
* Changes to state: Condensing to become liquid