

AR Chemistry: Final “Final Final Review Set”
Last 20% of Final Exam 2: Equilibrium and Nuclear

Equilibrium

You are given the following equation:



1. What is the Keq equation for this reaction?
2. Why was one of the chemicals ignored in making the Keq equation?
3. What things are equal when the system reaches equilibrium?
4. Which way will the system shift if:
 - a. Reactants are added?
 - b. Temperature is increased?
 - c. Pressure is lowered?
 - d. Products are removed

You are given the following equation:



5. Given that Keq = 200. What would be the NH₃ concentration if [N₂] = 2.0 and [H₂] = 0.50 ?

Nuclear Processes

6. What are the three types of nuclear radiation?
7. Which type of nuclear radiation
 - a. ejects a negatively charged particle?
 - b. is neutral and not a particle?
 - c. ejects a positively charged particle?
 - d. has the least energy – can be blocked with a piece of paper?
 - e. has the most energy – passes through the earth?
 - f. has high energy and can cause damage, but can be stopped with lead?
 - g. is actually a helium nucleus?
 - h. is actually an electron?
 - i. is a form of electromagnetic radiation (light)?
 - j. is the result of a neutron in the nucleus exploding
8. What happens to the atomic number and mass of an atom that undergoes alpha decay?
9. What happens to the atomic number and mass of an atom that undergoes beta decay?
10. What is the form of nuclear energy given off from combining matter and losing some of it in the process?
11. What is the form of nuclear energy given off from uranium being split apart by neutrons, releasing two neutrons to continue the reaction?

Equilibrium

You are given the following equation:



1. What is the Keq equation for this reaction? **Keq = [A]⁴ / [X]³[Y]²**
2. Why was one of the chemicals ignored in making the Keq equation? **solids / liquids are ignored!!**
3. What things are equal when the system reaches equilibrium? **forward / reverse reaction rates**
4. Which way will the system shift if:
 - a. Reactants are added? **To the Right (to remove excess)**
 - b. Temperature is increased? **To the Left (the - ΔH side)**
 - c. Pressure is lowered? **To the Right (to make more gas)**
 - d. Products are removed? **To the Right (to replace the missing)**

You are given the following equation:



5. Given that Keq = 200. What would be the NH₃ concentration if [N₂] = 2.0 and [H₂] = 0.50 ?

$$Keq = \frac{[NH_3]^2}{[N_2][H_2]^2} = 200 \quad 200 = \frac{[NH_3]^2}{[2.0][0.5]^3} \quad [NH_3]^2 = 4.47 \text{ M}$$

Nuclear Processes

6. What are the three types of nuclear radiation? **alpha, beta, gamma**
7. Which type of nuclear radiation
 - a. ejects a negatively charged particle? **beta**
 - b. is neutral and not a particle? **gamma**
 - c. ejects a positively charged particle? **alpha**
 - d. has the least energy – can be blocked with a piece of paper? **alpha**
 - e. has the most energy – passes through the earth? **gamma**
 - f. has high energy and can cause damage, but can be stopped with lead? **beta**
 - g. is actually a helium nucleus? **alpha**
 - h. is actually an electron? **beta**
 - i. is a form of electromagnetic radiation (light)? **gamma**
 - j. is the result of a neutron in the nucleus exploding? **beta**
8. What happens to the atomic number and mass of an atom that undergoes alpha decay? **Number down 2
Mass down 4**
9. What happens to the atomic number and mass of an atom that undergoes beta decay? **Number up 1
Mass stays same**
10. What is the form of nuclear energy given off from combining matter and losing some of it in the process? **Fusion**
11. What is the form of nuclear energy given off from uranium being split apart by neutrons, releasing two neutrons to continue the reaction? **Fission**