Definition: .2SO3 (g) Heterogeneous equilibrium : When the reactants and the products are in different physical states, and not all substances have the same physical state [5] , for example : CO2 (g) + C (s) ?[4] Types of chemical equilibrium : We can divide the chemical equilibrium into two main types: Homogeneous equilibrium and Heterogeneous equilibrium .[NH3] 2 Vb = Kb [NH3] 2 In equilibrium: rate of forward reaction (Vf) = rate of backward reaction (Vb) Vf = Vb Kf [N2] [3H2] 3 = Kb [NH3] 2 Kc = (Kf)/Kb = (?(@[NH3])2)/(?(@[N2][3H2])3) Factors affecting the equilibrium constant: Despite the ability of both pressure and concentration to influence the equilibrium position of the reaction, it cannot influence the equilibrium constant , Likewise, the catalyst does not have the ability to influence the equilibrium constant .While temperature affects the equilibrium constant Whereas, in exothermic reactions, increasing the temperature reduces Kc , As for the endothermic reactions, the value of Kc increases due to the increase in temperature.[9]For example : aA + bB –> eE + fF and when the temperature is established : Kc = [E]e [F]f / [A]a [B]b Kc is the equilibrium constant While the equation [E]e [F]f / [A]a [B]b is known as the expression of the law of mass action .[6] Equilibrium constant : The equilibrium constant expresses the connection between the amount of products and the reactants in the chemical equilibrium and at a given temperature [7_8] Could be seen in the following equation : N2+ 3H2 2NH3 We will apply to the equation the law of mass action : Rate of Forward reaction : Vf ?2CO (g) Law of mass action: It is stated that when the temperature is established in the case of chemical equilibrium in a reaction, the rate of reaction velocity is proportional to the proportional to the product of the effective mass concentration of the reactants.in another meaning , there is no alteration in the concentrations of the reactants and the products as well, This procedure has another name, which is the dynamic equilibrium.3–In equilibrium, and although both the reactant and product molecules may interact, the concentrations of the substances in the equilibrium are constant.[3] Characteristics of chemical equilibrium : 1– Chemical equilibrium occurs only in reversible reactions .Homogeneous equilibrium : Homogeneous equilibrium occurs when both the reactants and the products are in the same physical state , for example : 2SO2 (g) + O2 (g) ?4–Some physical properties such as color, concentration, pressure and density may help us know that the reaction has reached the equilibrium stage .6– In chemical equilibrium, the catalyst helps increase the reaction velocity, which makes it able to achieve equilibrium, but this does not mean the catalyst's ability to change the equilibrium point or even the equilibrium constant, as the catalyst cannot influence either of them .[N2] [3H2] 3 Vf = Kf [N2] [3H2] 3 Rate of backward reaction : Vb ?5–The chemical equilibrium must occur in a closed system and this means that no other materials enter the system or even some materials leave the system.Chemical equilibrium is a dynamic procedure , this procedure take place when the forward reaction average and the reverse reaction average are equal.