ATOMIC ENERGY CENTRAL SCHOOL, No – 4

RAWATBHATA

HANDOUT-MODULE-3/6

SUBJECT – CHEMISTRY CLASS – XI

UNIT – VII, EQUILIBRIUM

(CHEMICAL EQUILIBRIUM)

**Le Chatelier’s Principle: “**If reaction is at equilibrium subjected to a change in anyone of the reaction parameters such as concentration, temperature or pressure, the equilibrium shifts in the direction that tends to undo the effect of the change”.

Le Chatelier’s Principle can be applied to predict the direction of the equilibrium when any change is done in reaction at equilibrium.

**Change in concentration**: If any addition amount of reactants or products are added to the system at equilibrium, the reaction will proceed in opposite direction where the change is done. In the same way when any molecule is removed from the system, the equilibrium will proceed to recover that.

**Change in pressure:** Effect of change of pressure is seen on those equilibrium where the reactants and products are gases. Since the gases are compressible, hence external pressure maters for such reactions. On increasing pressure a gaseous equilibrium shifts in the direction where the moles of the gases are less. This is also because of their less volume.

**Change in temperature:** This change is effective on those equilibrium where heat change takes place. In a reversible process if the forward reaction is exothermic, its backward reaction will be endothermic. On increasing temperature the equilibrium will shift in the direction where the process is endothermic and vice-versa.

A catalyst has no role on equilibrium. It affect both forward and backward reaction. Initially it may help to attend equilibrium.

Addition of noble gases in equilibrium is also affect the process. This is done either at constant volume or at constant pressure. This effect depend on the state of reactants and products. At constant volume gaseous equilibrium is not affected.

Applications of Le Chatelier’s Principle: This principle is very useful in industries where manufacturing of chemicals going on. On the basis of this principle, most favourable conditions are decided. Manufacturing of ammonia by Haber’s process, sulphuric acid by contact process are benefitted by Le Chatelier’s Principle.