INDIAN SCHOOL DARSAIT
DEPARTMENT OF CHEMISTRY

Subject: Chemistry Topic: Chemical Equilibrium Date : 17.01.18
Resource Person: Jyothy Sukhadiya
Name of Student: _____ Class & Division: XI : Roll No:

1.	Write the equilibrium constant expression for : $2NOCl\,(g) \rightleftharpoons 2\,NO\,(g) + Cl_2\,(g)$	1
2.	a) Write the conjugate acids of i) NH_3 ii)HSO_4^- iii)) HPO_4^{2-} b) Write the conjugate bases of i) HSO_4^- ii) NH_3 iii) H_2O	1
3.	What do you mean by i) Common ion effect ii) Buffer solution?	2
4.	Differentiate between Solubility Product and ionic product.	2
5.	Classify the following as Lewis acid or Lewis base H^+ , H_2O , NH_3 , BF_3 , Al^{3+} , $BeCl_2$, Cl^-	2
6.	Arrange the following in the order of their increasing acid strength. Justify your answer. a) HCl, HI, HBr , HF b) H_2O, NH_3, HF, CH_4	2
7.	Calculate the pH value of 0.001 M HCl?	2
8.	Calculate the solubility of $PbCl_2$ if its solubility product is $1.0x10^{-6}$ at 298K.	2
9.	(a)State Le Chatelier principle. (b) What is the effect of temperature on the following equilibrium reactions? (i) $N_2(g) + 3H_2(g) \leftrightarrow 2NH_3(g)$; ΔrH^o= - 92.38 kJ/mol. (ii) $N_2(g) + O_2(g) \leftrightarrow 2NO(g)$; ΔrH^o = + 180 kJ/mol.	
10.	At 473 K, equilibrium constant, K_c for decomposition of PCI_5 is 8.3×10^3. If decomposition is depicted as $PCl_5\,(s) \rightleftharpoons PCl_3\,(s) + Cl_2(g)$ $\Delta_r H^0 = 124.0$ kJ mol^{-1} (i) Write an expression for K_c for the reaction. (ii) What is the value of K_c for the reverse reaction at the same temperature?	2
11.	In an experiment at 1000 K the concentrations of different species are $[NH_3]$=0.105 mol dm^{-3},$[N_2]$=1.10 mol dm^{-3} and $[H_2]$=1.50 mol dm^{-3}. Calculate the values a) $K_c$for the reaction. $N_2 + 3H_2 \rightarrow 2NH_3$ b) K_p for the reaction:$N_2 + 3H_2 \rightarrow 2NH_3$ (R = 0.083 bar L K $^{-1}$mol^{-1})	3
12.	Consider the reaction $2SO_{2(g)} + O_{2\,(g)} \rightleftharpoons 2SO_{3\,(g)} + 189.4$ KJ Indicate the direction in which the equilibrium will shift when a) Temperature is increased b) a catalyst is added c) pressure is decreased d) Concentration of SO_2 is increased	2