Subject: Chemistry   **Assignment No: 4**
Allotment Date: 1/12/17   **Submission Date: 5/ 12/17**

S.No	QUESTION	MARKS	LEVEL
	OBJECTIVE TYPE		
1.	What is Redox reaction.	1	Knowledge
2.	Write the expression for the equilibrium constant, Kc for each of the following reactions: (i) $2NOCl (g) \rightleftharpoons 2NO (g) + Cl_2 (g)$ (ii) $2Cu(NO_3)_2 (s) \rightleftharpoons 2CuO (s) + 4NO_2 (g) + O_2 (g)$	1	Knowledge
3.	Justify that the reaction: $2Cu_2O(s) + Cu_2S(s) \rightarrow 6Cu(s) + SO_2(g)$ is a redox reaction.	1	Analysis
	SHORT ANSWER TYPE I		
4.	Reaction between N_2 and O_2 takes place as follows: $2N_2 (g) + O_2 (g) \rightleftharpoons 2N_2O (g)$ If a mixture of 0.482 mol N_2 and 0.933 mol of O_2 is placed in a 10 L reaction vessel and allowed to form N_2O at a temperature for which $Kc = 2.0 \times 10^{-37}$, determine the composition of equilibrium mixture.	2	Understanding and application
5.	The following concentrations were obtained for the formation of NH_3 from N_2 and H_2 at equilibrium at 500K. $[N_2] = 1.5 \times 10^{-2}$M. $[H_2] = 3.0 \times 10^{-2}$ M and $[NH_3] = 1.2 \times 10^{-2}$M. Calculate equilibrium constant..	2	Understanding and application
6.	Derive Kp = Kc RT	2	Synthesis +understanding
7.	.The value of Kc for the reaction $2A \rightleftharpoons B + C$ is 2×10^{-3}. At a given time,the composition of reaction mixture is $[A] = [B] = [C] = 3 \times 10^{-4}$ M. In which direction the reaction will proceed?	2	Analysis
	SHORT ANSWER TYPE II		
8.	The equilibrium constant expression for a gas reaction is, $$Kc = \frac{[NH_3]^4 [O_2]^5}{[NO]^4 [H_2O]^6}$$ Write the balanced chemical equation corresponding to this expression.	3	understanding
9.	Bromine monochloride, BrCl decomposes into bromine and chlorine and reaches the equilibrium: $2BrCl (g) \rightleftharpoons Br_2 (g) + Cl_2 (g)$ for which $Kc = 32$ at 500 K. If initially pure BrCl is present at a concentration of 3.3×10^{-3} mol L^{-1}, what is its molar concentration in the mixture at equilibrium?	3	analysis
10.	Chlorine is used to purify drinking water. Excess of chlorine is harmful. The excess of chlorine is removed by treating with sulphur dioxide. Present a balanced equation for this redox change taking place in water.also mention the value associated with it.	3	Value based
	LONG ANSWER TYPE		
11.	Depict the galvanic cell in which the reaction $Zn(s) + 2Ag+(aq) \rightarrow Zn^{2+}(aq) + 2Ag(s)$ takes place, Further show: (i) Which of the electrode is negatively charged, (ii) the carriers of the current in the cell, and (iii) individual reaction at each electrode.	5	understanding
12.	a)Which of the following reactions will get affected by increasing the pressure?Also, mention whether change will cause the reaction to go into forward or backward direction. (i) $COCl_2 (g) \rightarrow CO (g) + Cl_2 (g)$ (ii) $CH_4 (g) + 2S_2 (g) \rightarrow CS_2 (g) + 2H_2S (g)$ (iii) $CO_2 (g) + C (s) \rightarrow 2CO (g)$ b)Balance the following equations in basic medium and identify the oxidising agent and the reducing agent. $P_4(s) + OH^-(aq) \rightarrow PH_3(g) + HPO_2^- (aq)$	5	Analysisy+Understanding