ST. XAVIER'S SENIOR SECONDARY SCHOOL, DELHI – 110 054

Std. 11 Time : 1 hr.

24-11-2014 Second Unit Test in CHEMISTRY M. Marks: 20

1. Define Lechatlier's principle. (1)

2. a) Write the conjugate acid of HCO_3^-.
   b) Define the term base as per Lewis concept. (1)

3. Explain two uses of salt bridge. (1)

4. Draw a labelled diagram of normal hydrogen electrode . (1)

5. Define pH. What is the maximum value of pH possible? On the pH scale the concentration of hydrogen ions in a sample of soft drink is 3×10^{-3} mol/L. Calculate the pH value . (2)

6. Answer the following questions w.r.t electrochemical series : -
   a) What happens to reduction potential down this series?
   b) Why is hydrogen included in this series of metals?
   c) As we move down this series how does the reducing power change?
   d) Give one use of this series. (2)

7. Balance the following reaction :-

   $MnO_4^-(aq.) + Br^- \rightarrow MnO_2 + BrO_3^-(aq.)$ (basic medium) (2)

8. Define degree of dissociation .Derive relationship between degree of dissociation and equilibrium constant K_C. (2)

9. The solubility product Ksp value of AgBr is 5.0×10^{-13}. Calculate the solubility of AgBr. (2)

10. One mole of water and one mole of carbon monoxide are taken in a10L flask and heated to 725K. At equilibrium 40% of water reacts by mass reacts with CO as per the following reaction : -

    $$H_2O(aq.) + CO(aq.) \rightleftarrows H_2(g) + CO_2$$

    Calculate the equilibrium constant for the reaction. Also calculate the Kp value for the above reaction, given that R = 0.831 l atm./K/mol. (3)

11. Given that the reduction potential of magnesium and silver metal respectively is -2.37 V and 0.80 V. Answer the following questions if an electrochemical cell is set up between these two metals :-
    a) Identify the cathode.
    b) Write both the half reactions.
    c) Write the overall cell reaction.
    d) Write the cell representation under standard conditions .
    e) Calculate emf of the cell . (3)

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