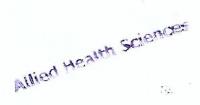UNIVERSITY OF JAFFNA, SRI LANKA
FACULTY OF ALLIED HEALTH SCIENCES
FIRST YEAR SECOND SEMESTER EXAMINATION IN BPharmHons- 2020
PHACH 1273 PHARMACEUTICAL CHEMISTRY I

Date: 0 6 SEP 2022   Time: 3 Hours

ANSWER **ALL** THE SIX QUESTIONS

1.   1.1   Define "Titrimetric analysis".   (10 Marks)

      1.2   Standardization of a given $KMnO_4$ solution was done with standard sodium oxalate (0.05 M) solution. 10.0 mL of $Na_2C_2O_4$ solution was pipetted into a titration flask and 5ml of dil H_2SO_4 was added to the titration flask. The resulting solution was titrated against $KMnO_4$ solution, and the end point was 9.5 mL.

             1.2.1 Write down the possible observation during the analysis?   (10 Marks)

             1.2.2 Find out the moles of sodium oxalate present in the given sample.   (20 Marks)

             1.2.3 Calculate the number of moles of potassium permanganate required in the analysis?   (30 Marks)

             1.2.4 Determine the concentration of potassium permanganate.   (30 Marks)

2   2.1   Give the IUPAC names of the following compounds.

             2.1.1 $[Fe(CN)_6]^{3-}$ (10 Marks)

             2.1.2 $[Co(en)_3]^{3+}$ (10 Marks)

             2.1.3 $Na_2[Ni(Cl)_4]$ (10 Marks)

             2.1.4 $Ni(CO)_4$ (10 Marks)

      2.2   Diagrammatically illustrate the possible isomerisms of

             2.2.1 $[Pt(NH_3)(H_2O)Cl_2]$ (25 Marks)

             2.2.2 $[Co(NH_3)_5(NO_2)]^{2+}$ (35 Marks)

3   3.1   Predict the geometry of the following compounds based on the Valence-Shell Electron Pair Repulsion (VSEPR) theory.

         3.1.1 BCl_3 **(25 Marks)**

         3.1.2 H_2O **(25 Marks)**

     3.2   Explain the molecular geometry of BeH_2 and BF_3 based on the Valence bond theory.   **(50 marks)**

4.   4.1   Regarding O_2 and F_2,

         4.1.1 Draw the molecular orbital energy level diagrams.   **(40 Marks)**

         4.1.2 Write down the molecular orbital electronic configuration of the above molecules.   **(20 Marks)**

         4.1.3 What kind of magnetic properties do they have?   **(20 Marks)**

         4.1.4 Find the bond order of the above molecules and explain their stability.   **(20 Marks)**

5.   5.1   What is "Limit test"?   **(10 Marks)**

     5.2   Briefly describe the principle and a standard protocol of the limit test for chloride.   **(70 Marks)**

     5.3   List the application of Limit test.   **(20 Marks)**

6.   6.1   Write short notes on the followings:

         6.1.1 Photoelectric effect   **(50 Marks)**

         6.1.2 Compton effect   **(50 Marks)**