b) What do you mean by indicator constant and conditional indicator constant ? Elaborate your answer with suitable example. $3\frac{1}{2}$

c) What is P.M 2.5 ? How does it affect the living atmosphere of earth? 3

d) Write down the composition of Phosphor bronze. Describe the estimation of Phosphorous from it. 3

3. a) Write a note on Plate theory of Chromatographic separation. 3

b) How will you estimate the amount of SCN^- in a sample of AgSCN complexometrically ? 3

c) (i) What are the different types of water pollution ? How drinking water differs from the deionized water ? $2\frac{1}{2}$

(ii) What is the pH of a solution whose hydrogen ion concentration is 0.05 g / litre ? $\frac{1}{2}$

(iii) The pH value of a solution of caustic soda is 9.0. Calculate the hydrogen ion concentration, assuming complete ionization of the salt. $\frac{1}{2}$

d) Describe estimation of Copper electrolytically. Mention slow electrolysis and rapid electrolysis during estimation of Copper. 3

Ex/Chem/H/32/XVIII/77/2019

FINAL B. SC. EXAMINATION, 2019

(2nd Semester)

CHEMISTRY (HONOURS)

PAPER - XVIII

ANALYTICAL CHEMISTRY

Time : Two hours Full Marks : 25

Answer ***any two*** questions.

1. a) Establish the relation between distribution coefficient (K_d) and pH of the medium during extraction of a metal complex, MQ, in organic solvent from aqueous solution of M^{2+} by adding complexing ligand H_2Q. $3\frac{1}{2}$

b) How will you estimate each of Mg^{2+}, Zn^{2+} and Cu^{2+} in a mixture complexometrically by using suitable masking and demasking agent ? 3

c) What are the different methods of removing hardness of water? Give the chemical reactions taking place in any two of them. 3

d) What are the main elements present in plain carbon steel ? How will you estimate Ni from it ? 3

2. a) How do you quantitatively estimate the presence of Mn and Cr in the mixture of $KMnO_4$ and $K_2Cr_2O_7$ in a solution by using spectrophotometric technique ? 3