

## PRACTICALS (102201)

### OBJECTIVES :-

1. To conduct separation and estimation of amount of metal ions in binary metal ion mixture.
2. To use/apply the basic statistical treatment of the analytical data for getting a correct result of Volhard's Method.
3. To conduct the experiment on various instrumental techniques.
4. To describe the principles behind the experiment performed in the laboratory.
5. To conduct chemical analyses by qualitative and quantitative analysis of metal complexes.

Code : 102201	PRACTICAL	4 CREDITS
Inorganic Chemistry	<b>Preparation and estimation of percentage metal ion present in a metal complexes :-</b> 1. $Ti(C_9H_8NO)$ 2. $2H_2O_2 \cdot VO(acac)_2$ 3. $Cis-K[Cr(C_2O_4)_2(H_2O)_2]$ 4. $[Mn(acac)_3]$ 5. $K_3[Fe(C_2O_4)_3]$ 6. $Hg[(Co(SCN)_4)]$ 7. $[Co(III)(NH_3)_6]Cl_3$ 8. $[Co(III)(NO_2)(NH_3)_5]Cl_2$ 9. $[Ni(NH_3)_6]Cl_2$	8 Hours/ Week
Organic Chemistry	<b>Qualitative Organic Analysis:-</b> Separation, purification and identification of binary (Solid-Solid) mixtures. The separation should be carried out using Chemical method. The two components are solid-solid mixtures. Student should submit the purified samples of the separated compounds and prepare a suitable derivative of the two compounds separated out.	
Physical Chemistry	<b>Instrumentation:-</b> 1. Determination of strengths of halides in a mixture potentiometrically. 2. Determination of the strength of strong and weak acid in a given mixture conductometrically. 3. Determination of solubility and solubility product of sparingly soluble salt $BaSO_4$ . 4. Determine the molecular refraction of methyl acetate, ethyl acetate, n-hexane and carbon tetrachloride and calculate the refraction of $CH_2$ , C, H and O atoms. 5. To study the effect of surfactants (sodium chloride) on surface tension of given liquid. 6. To determine the radius of molecule by viscosity measurements.	
Analytical Chemistry	1. To carry out assay of the sodium chloride injection by Volhard's method. Statistical method.	

	<ol style="list-style-type: none"><li>2. To determine amount of Cr(III) and Fe(II) individually in a mixture of the two by titration with EDTA.</li><li>3. To determine the breakthrough capacity of a cation exchange resin.</li></ol>	
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**Reference Books :**

1. A Text book of Quantitative Inorganic Analysis; A. I. Vogel
2. A Text book of Quantitative Organic Analysis; A. I. Vogel
3. Practical Inorganic Chemistry; Pass Geoffrey and Haydn Sutcliffe.
4. Advanced Practical Inorganic Chemistry; Gurudeep Raj;.
5. Vogel's Qualitative Inorganic Analysis, D. Svehla, VII Edn. Orient Longman Ltd.
6. Systematic experimental physical chemistry – T. K. Chondhekar & S.W. Rajbhoj
7. Experiments in chemistry – D.V. Jahagirdar