

Course Code					Analytical Chemistry I					
Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs/Week	Theory			Practical		Total Marks
					MS	ES	IA	LW	LE/Viva	
0	0	3	1.5	3	25	50	25	25	25	100

**COURSE OBJECTIVES**

- 1 Learning the basic experimental techniques like ion-exchange, solvent extraction, titrimetric methods
- 2 Gaining experimental knowledge to determine cation or anion content by ion-exchange chromatography
- 3 Estimation of organic content by spectrophotometric methods
- 4 Quantitative analysis of organic content by titrimetric methods
- 5 Determining the inorganic content in the water sample

1. Determination of cation content in hard water by ion exchange chromatography.
2. Ion-exchange separation of cations and anions
3. To determine the amount of each para nitro-phenol and meta nitro-phenol from the given mixture by spectrophotometric titration using standard NaOH solution at  $\lambda_{\text{max}} = 280 \text{ nm}$
4. Solvent extraction of transition metal ions
5. Estimation of the purity of oxalic acid employing standard Ce(IV) solution
6. Redox titrations of determination of ascorbic acid
7. Simultaneous determination of metal ions by spectrophotometry
8. Determination of total alkalinity of soda ash.
9. Determination of nitrite Using NEDA in drinking water samples.
10. Determination of Cr (VI) using Diphenyl carbazide
11. To determine the stoichiometry and stability constant of ferric salicylic acid complex by Job's method and mole ratio method
12. To determine the indicator constant and isobestic point of an indicator

**COURSE OUTCOMES**

On completion of the course, student will be able to

- CO1** – Student will get an insight into the laboratory techniques like ion-exchange, solvent extraction and titrimetric methods
- CO2** - Student will learn the experimental analytical technique to determine inorganic and organic content by ion-exchange chromatography.
- CO3** - Student will acquire the knowledge of determination organic content by spectrophotometric methods.
- CO4** – Students will gain experience in determining the organic content titrimetric methods
- CO5** - Students will be able to determine the inorganic content in water sample.

**TEXT/REFERENCE BOOKS**

1. Analytical Chemistry Practice, John H. Kennedy, Saunders College Publishing, Second Edition 1990.
2. Vogels Textbook of Quantitative Chemical Analysis, 6th Edition, 2002.
3. Comprehensive Experimental Chemistry; V. K. Ahluwalia, New Age Publications, 1997

4. Analytical Chemistry: Theory and Practice; R. M. Varma, CBS Publishers, 1994

5. A. K. Nad, B. Mahapatra & A. Ghosal, An Advanced Course in Practical Chemistry, New Central, 2007. Vogel's Text Book of Practical Organic Chemistry (5th Edn).

#### END SEMESTER EXAMINATION QUESTION PAPER PATTERN

**Max. Marks: 100**

Laboratory work including maintaining journal book+ mid-sem viva (LW)

End-sem exam and viva (LE/Viva)

**Exam Duration: 3 Hrs**

50 Marks

50 Marks