**Name of Department: Chemistry Annexure - I**



1. **Subject Code**: **Course Title**:

2. **Contact Hours**: L: T: P:

 . **Semester**: I / II

3. **Credits:**

4. **Pre-requisite**: Basic Knowledge of Experiments in Chemistry

5. **Course Outcomes**: After completion of the course students will be able to

1. Analyze the water and oil quality parameter.
2. Understand the concept of viscosity, surface tension and their applications.
3. Analyze the ores and bleaching powder sample
4. Knowledge of pH metric and calorimetry and their application in industry.

**Detailed Syllabus: Students have to perform any twelve experiments:**

| **UNIT** | **CONTENTS** | **CONTACT HRS** |
| --- | --- | --- |
| **EXP- 1** | **To determine the alkalinity of the given water sample containing carbonate (CO32-)ions and bicarbonate (HCO3-) ions by titrating it against standard HCl solution [N/10] using phenolphthalein and methyl orange as indicators.** | **3** |
| **EXP - 2** | **To determine the chloride ion (Cl-) content in the given water sample by Argentometric method (Mohr’s method) using N/50 AgNO3 as a standard solution and potassium chromate (K2CrO4) as an internal indicator.**  | **3** |
| **EXP-3** | **To determine the temporary and permanent hardness of given water sample by titrating it against standard solution of M/100 Ethylene Diamine Tetracetic Acid (EDTA) using Eriochrome black-T (EBT) as an internal indicator.**  | **3** |
| **EXP-4** | **To determine the coefficient of viscosity of the given sample solution by Ostwald’s viscometer (Viscosity of water = 0.0101 Poise).** | **3** |
| **EXP-5** | **To determine the ferrous ion (Fe++) content in given sample solution of Mohr’s salt (FeSO4.(NH4)2SO4.6H2O) by titrating it against standard N/30 potassium dichromate (K2Cr2O7) solution by using potassium ferricyanide K3 [Fe (CN) 6] as an external indicator.** | **3** |
| **EXP - 6** | **To determine the surface tension of the given sample solution by drop number method.** | **3** |
| **EXP - 7** | **To determine the percentage of available chlorine in the given sample of 1 gram bleaching powder by titrating it against standard solution of N/25 sodium thiosulphate (Na2S2O3) using starch (C6H10O5)n as an internal indicator.** | **3** |
| **EXP – 8** | **To determine the alkalinity of the given water sample containing carbonate (CO32-)ions and hydroxide (OH-) ions by titrating it against standard HCl solution [N/10] using phenolphthalein and methyl orange as indicators.** | **3** |
| **EXP – 9** | **To determine the rate constant of a reaction** | **3** |
| **EXP –10** | **To determine the acid value of oil** | **3** |
| **EXP –11** | **To determine the Copper (Cu++) ion content in the given sample of copper ore (blue vitriol) by titrating it against standard N/30 sodium thiosulphate solution using starch as indicator by Iodometric titration.** | **3** |
| **EXP - 12** | **Synthesis of phenol-formaldehyde resin**  | **3** |
| **EXP - 13** | **To determine the strength of unknown HCl solution by titrating it against N/10 NaOH solution with the help of pH meter.**  | **3** |
| **EXP - 14** | **Determination of adsorption isotherm of acetic acid on activated charcoal** | **3** |

**Text Books:**

* [Sunita Rattan](http://www.bookadda.com/author/sunita-rattan), “ Comprehensive Engineering Chemistry”, S.K. Kataria & Sons Delhi, India, 2nd Edition (2009)
* Shashi Chawala , “Theory and Practicals of Engineering Chemistry”, Dhanpat Rai and Company, India 3rd Edition (2012)