## CHMDC 124 (T+P): Industrial Chemistry

**Credit – (2T+2P), Theory Hours – 30, Practical Hours – 60**

**Course outcomes:**

At the end of the course the student will be able to-

CO -1. Know about industrial products, their preparations, manufacturing, uses and market tends.

CO -2. Apply the knowledge understand, analyse and solve the problem with environmental impact.

| CO | PO-1 | PO-2 | PO-3 | PO-4 | PO-5 | PO-6 | PO-7 | PO-8 |
|---|---|---|---|---|---|---|---|---|
| CO-1 | 3 | 2 | 1 | | | | | 1 |
| CO-2 | 3 | 2 | 1 | 1 | 1 | | 1 | 1 |

**UNIT - I - Explosives and Pesticides** **[25 Marks] [15 Hours]**

Explosives: Introduction, classification, synthesis and uses of explosives:

Tetryl, PETN, HMTA, RDX, Nitro glycerine

Pesticides: Malathione, Parathione, Aldrin, Methoxychlor.

**UNIT - II - Organic reagents in Inorganic analysis and Dyes** **[25 Marks] [15 Hours]**

Organic reagents in Inorganic analysis: Dithiazone, Cupferron, 8-hydroxyquinoline, DMG, Benzoin oxime.

Dyes: Introduction, classification, synthesis and uses of dyes: Malachite green, Indigo, Alizarin, Congo red, Eosin

## Reference books

1. Shreve's Chemical process Industry by George T. Austin, 2017.
2. Organic chemistry by I. L. Finar, Volume 2, Pearson Education, 1996.
3. Fundamentals of Analytcal chemistry by Skoog and West, Cengage Technology Edition, 2013.

## CHMDC 124 (P): Chemistry Practical

## Chemistry Lab- III (2 credit)

**Credit – 2, Hours – 60, Marks - 50**

Basic awareness to lab instruments, reagents, indicators & lab. technics.

**(I) Volumetric Titrations**

Preparation of solutions of different Normality, Molarity, %V/V, %W/V, %W/W.

**(II) Acid base titrations**

1. $Na_2CO_3$ → 0.1N HCl

2. Estimation of carbonate and bicarbonate together → 0.1N HCl

**(III) Redox titration**

Preparation of standard solutions of 0.05N $KMnO_4$

1. Std. $KMnO_4$ (0.05N ) → Oxalic acid

**(IV) Complexometry Titration**

Preparation of standard solutions of (0.01M) EDTA.

1. $Zn^{++}$ → Std. EDTA 0.01M)

**(V) Iodimetry Titration**

Preparation of standard solutions of 0.05N $Na_2S_2O_3.5H_2O$.

1. Iodine → Std. Sodium thiosulphate

**(VI) Iodometry Titration**

Preparation of standard solutions of 0.05N $Na_2S_2O_3.5H_2O$

1. $CuSO_4.5H_2O$ → Std. $Na_2S_2O_3.5H_2O$ (0.05N)

2. $K_2Cr_2O_7$ → Std. $Na_2S_2O_3.5H_2O$ (0.05N)

**Demonstration**

**Concept of pH, buffer solution, electrodes**

1. Demonstration of pH – meter and measurement of pH of o.1N HCl solution.

2. Preparation of an acidic buffer ($CH_3COONa$ - $CH_3COOH$, pH = 5) and its pH measurement.

3. Preparation of a basic buffer ($NH_4Cl$ - $NH_4OH$, pH = 10) and its pH measurement.

**Viva-Voce questions**

## REFERENCE BOOKS


1. **'Vogel's Textbook of Quantitative Chemical analysis'** Revised by G. H. Jeffery, J. Bassett, J. Mendham & R. C. Denney, ELBS (English Language Book Society) Longman. 5th Ed., New York.

2. **'Analytical Chemistry'** by Dhruba Charan Dash, 2011, 2th Ed., PHI Learning Private Ltd, New Delhi.

3. **'Analytical Chemistry' by Gary D. Christian,** 1986, 4th Ed., John Wiley & Sons.

4. **'Advanced Practical Inorganic Chemistry'** by Gurdeep Raj, 9th Ed., Goel Publishing House, Meerut.

5. **'Advanced University Practical Chemistry'** by P. C. Kamboj, Vishal Publishing Co., Jallandhar – Delhi.