VEER NARMAD SOUTH GUJARAT UNIVERSITY

M.Sc. – PHARMACEUTICAL CHEMISTRY

SEMESTER

TO COME IN FORCE FROM JUNE-2008

PRACTICALS

COURSE NO. -

CPC-505 PRACTICALS

Group-A: Organic Qualitative Analysis (Three component Mixture :- Minimum 8)
Group-B: Organic Quantitative Analysis
Group-C: Organic Preparation

Books Recommended:

1. Organic Qualitative Analysis by Vogel's (ELBS).
2. Organic Quantitative Analysis by Vogel's (ELBS).
3. A Text book of Practical Organic Chemistry by Vogel's (ELBS).
4. Elementary Practical Organic Chemistry by Vogel's, Part I, II & III (ELBS).
5. Practical Organic Chemistry by Mann and Saunders.
6. Comprehensive Practical Organic Chemistry by Vol. I & II by Ahuluwalia and Aggrawal.

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Practicals: Chromatographic Techniques (1) Paper Chromatography
(2) TLC
(3) GC

- Multi-steps synthesis of Organic Compounds using TLC and Spectral study.
- Extraction of Organic compounds from natural sources and their separation- HPLC.
- Separation of Organic Mixture

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- Multi-steps synthesis of Organic Compounds using TLC and Spectral study.
- Qualitative Analysis of three component mixture separation
- Spectrophotometric (**UV \ VIS**) Estimation of Pharmaceuticals.

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1. **Qualitative Analysis:** Analysis of Mixture containing 8 radicals, Including two less common elements- W, Ti, Th, Mo, Se, Ce, Zr, V, Li
2. **Inorganic Preparations:** Preparation of selected inorganic compounds and their estimation by usual methods to determine percentage purity of the compounds prepared.

3. **Flame photometry:** Na^+ and K^+ when present together, Lithium\ Calcium.
4. **Water Analysis:** Identification and Determination of some Cations and Anions like Cl^-, SO_4^{--}, NO_3^-, HCO_3^-, Ca^{++}, Mg^{++}, Na^+, K^+, etc., Measurement of C.O.D. and B.O.D., Total Hardness, pH, Conductivity of the sample.

Reference Books:

1. Vogel's Qualitative Analysis, G.Svehla, Orient Longman
2. Advanced Inorganic Analysis, Subhash-Satish, Pragati Prakashan.
3. Text books of Inorganic Analysis, Vogel's ELBS.
4. Inorganic Preparation, J. Palmar, Wealy.
5. Fundamental of Analytical Chemistry, Skoog & West, Holt, Rinehart and Winston Inc.
6. Environmental Chemistry, A. K. De, Wiley Eastern.

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1. **Ore and Alloy analysis:**
2. **Spectrophotometric Determination:** Determination of Composition and stability by Job's methods of continuous variations, Mole ratio method, Slope-Ratio method.
3. **Chromatography Separation:** Separation of cations and Anions by
    a. Paper Chromatography- Circular and Ascending
    b. Column Chromatography – Ion exchange
    c. Thin Layer Chromatography-Separation and Determination of Rf values.
4. **pH Metry:** Determination of stability constant of complexes by pH metry method.

Reference books:

1. Inorganic Reaction Mechanism, J. O. Edwards, Benjamin.
2. Mechanism of Inorganic Reaction, F.Basolo & R.G. Pearson, Wiley NewYork.
3. Fundamental of Analytical chemistry, Skoog & West, Holt, Rinehart and Winston Inc.

1. **Organic Chemistry:**
    i. Organic Preparations: Two Stage Preparation
    ii. Organic Spotting (With TLC monitoring and Spectral interpretation)

2. **Inorganic Chemistry:**
    i. Inorganic Preparation- Metal Complexes.
    ii. Qualitative Analysis- Six Radical Separation.

3. **Physical Chemistry:**
    a. **Instrumentation:**
        i. **Conductometry:** Mono and biprotic acid, mixtures of acids against strong/weak bases, argentometric, Complexometric, Replacement titrations, Verification of Onsagar's equation. Dissociation of weak acids.
        ii. **Potentiometry:** Acid-Base, Redox and Argentometric titrations.
        iii. **pH metry:** Acid-Base titration, pKa of acids and E^0_{QH2}
        iv. **Ultrasonics:** Acoustical parameter of liquids.
        v. **Refractrometry:** Binary Mixture and Solids
        vi. **Polarimetry:** Optically active compounds.
        vii. **Spectrophotometry:**

    b. **Physiochemical Exercises:**
        i. **Reaction dynamics:** Zero, First and Second order reactions
        ii. **Partition coefficient:** Dimerization of acids, $I\text{-}I_2$ system, $Cu^{2+}\text{-}NH_3$ complex.
        iii. **Thermodynamics:** Heat of solutions, Partial Molar Volume etc.
        iv. **Steam distillation:** Molecular weigh determination

4. **Analytical Chemistry:**
    i. **Practicals based on food analysis:** Milk, Honey, Oil, Tea-leaves, Turmeric powder etc.
    ii. **Drug Analysis:** Aspirin, Benzyl benzoate etc.
    iii. **Volumetric and Gravimetric exercise:** Ester, Peroxides, Other ions etc.
    iv. **Industrial products:** Estimation for purity and assay.