

M.Sc. Part-I (CH-130 & CH-230)

"INORGANIC AND ANALYTICAL CHEMISTRY COURSES"

Revised syllabus for Section "C" of CH-130 & CH-230

(W.E. FROM JULY, 1994)

CH-130 (Section-C) :- ANALYSIS OF ORGANICS AND ENVIRONMENTAL POLLUTENTS

1. Analysis of Organic Functional groups. (8)
 - i) Analysis of carbonyl compounds : Aldehydes, Ketones and Carboxylic acids.
 - ii) Analysis of nitrogen compounds : Amino group, Amino acids, Amides and Imides.
 - iii) Analysis of Sulphur compounds : Mercaptans, Sulphides, disulphides, sulphoxides and sulphones.
 - iv) Determination of water content of organic compounds.
Ref. -1. Pages 440 to 448, 458 to 466, 474 to 478, 486 to 488.
2. Analysis of Petroleum Products : (4)

Terms relating to petroleum, Distillation of gasoline, kerosene, naphtha, Glass point by Tag closed tester, flash and fire point by open cup, Free sulphur and corrosive sulphur compounds, Doctor test, Sulphur in petroleum by Lamp method and bomb method, Aniline point.
Ref. -2 Pages 662 to 680.
3. Analysis of Common Water Pollutants : (6)

Dissolved oxygen, COD, Chloride, cyanide, total hardness, Arsenic, selenium, cadmium, copper, chromium, lead, mercury, silver, pesticides and surfactants.
Ref.-3 Pages 221 to 260.
4. Analysis of Common Air Pollutants. (6)

Carbon monoxide, nitrogen oxide, sulphur dioxide, hydrogen sulphide, Hydrocarbons, Aromatic hydrocarbon in exhaust, Petrol and air spectrophotometric analysis of gaseous air pollutants.
Ref.-3 Pages 148 to 160.

REFERENCES :-

- Ref.1 Comprehensive Analytical Chemistry.
Edited Swaha volume XV (Methods of Organic Analysis)
By L.Mazor, Amsterdam Oxford New York.
- Ref.2 Commercial Methods of Analysis, 11th Edn.
By F.D. Snell and F.M. Biffen.
- Ref.3 Environmental Chemistry, 2nd Edn.
By Anilkumar De.

X CH-230 (Section C) Electrometric Methods of Analysis.

1. Voltametry: (6)

A.C. Polarography, Oscillographic Polarography, Anodic stripping voltametry, chronopotentiometry.

Ref.1 Pages 656 to 669.

2. Amperometry: (6)

Introduction, Apparatus for amperometric titration, technique, titration with two indicator electrodes, Advantages, disadvantages, Application of amperometric titrations.

Ref. 2 Pages 494 to 502.

3. Coulometry: (6)

General discussion, coulometry at controlled potential, separation of nickel and cobalt by coulometry at controlled potential.

Coulometric titration : Principle, instrumentation, circuit and cell for coulometric titration at controlled current external generation of titrant, Estimation of antimony (III) by coulometric titration at constant current.

Ref. 1 Pages 542 to 558

4. Electrogravimetry: (6)

Theory of electrogravimetry, electrode reactions over potentials, completeness of deposition, Electrolytic separation of metals with controlled cathodic potential.

Ref.1 Pages 515 to 524.

** Numerical Problems on above techniques.

References :-

Ref.1. Vogel's text book of quantitative Inorganic analysis, 4 th Edition.

By Bassett, Denny, Jeffery and Mendham.

Ref.2. Instrumental Methods of Chemical Analysis 5 th Edn.

By G.Chatwal and S.Anand.

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