

VEER NARMAD SOUTH GUJARAT UNIVERSITY M.Sc.-I (CHEMISTRY)
PROPOSED SYLLABUS TO EFFECTIVE FROM JUNE-2018
PAPER-IV (Instrumental and chemical analysis)

Max. Marks: 100(External –70 + Internal – 30)

Total Periods: 45

SEMESTER-I

UNIT-I: UV-Visible Spectrophotometry

12 Periods

Types of electronic transition, auxochrome, chromophore, Bathochromic effect, Hypso chromic effect, Hyper chromic effect, Hypo chromic effect, Factor affecting ϵ_{\max} like resonance, hyper conjugation, hydrogen bonding, steric effect, Woodward's rules for α,β -unsaturated ketones, Diene systems, aromatic system, Effect of solvent on absorption bands, law of absorption with derivation, Elementary idea of double beam automatic recording, Spectrophotometer, Application.

UNIT-II: CHROMATOGRAPHY

11 Periods

Thin-Layer Chromatography: Selection of stationary and mobile phase, Detection techniques – Elementary idea of HPTLC

Gas Chromatography: Selection of mobile phase – Selection of stationary phase in GLC and GSC – Detectors: FID (with modifications), TCD and ECD, Their comparison, Packed column, WCOT, SCOT (advantages and disadvantages) – Temperature programming – Derivatization in GC – Quantitative Analysis.

UNIT-III: CHEMICAL MATHEMATICS

11 Periods

Errors in Chemical analysis, classification of errors, nature and origin of errors, Propagation of error, Accuracy and precision, Average deviation and standard deviation and its physical significance, Normal Distribution curve and its properties. Confidence limit and probability, Statistical treatment for error analysis, student 't' test, rejection criteria and Q-test, method of least square

UNIT-IV: THERMAL METHODS OF ANALYSIS

11 Periods

(A) THERMOGRAVIMETRY:

Thermogravimetry, Instruments for TGA- thermobalance and furnace, Calibration of temperature scale, Factors affecting TGA results instrumental and experimental, Applications.

(B) THERMOMETRIC TITRATION:

Thermometric Titration (TT), Advantages, Instrument, Applications of TT in Neutralization Titration, Precipitation Titration, Complexometry Titration and Redox titration.