



MARATHA VIDYA PRASARAK SAMAJ, NASHIK.
G.M.D. ARTS, B.W. COMMERCE AND SCIENCE COLLEGE,
SIINAR, NASHIK-422103 (MS), INDIA.
NAAC Re-Accredited 'A' Grade College (CGPA 3.04)
ISO 9001:2015 Certified College



Department of Chemistry

Syllabus of Certificate course in Water and Soil Analysis

Chapter 1: Introduction

Definition of Soil, Soil as a natural body, Soil Components: Air, Water, inorganic and organic solids, Formation of Soil, Types of Soils & Basic Concepts

Chapter 2: Properties of Soil:

Introduction to properties of Soil, Soil separates, Texture, Aggregation and structure, Temperature, Color, Properties of soil mixture, Pore Space, Bulk Density, Aeration and Drainage, Compaction, Surface area, soil water relationship Morphology of Colloids, Chemistry of Clays, Ionic Exchange, Acidity Alkalinity, pH, Salinity, Reactions in Liming and Acidification. Soil Organic Matter,

Chapter 3: Fertility Status of Soils

Fertility status of soils, soil deficiency with respect nutrient components, brief study of micronutrient & macronutrient & Importance, remedial measures to overcome deficiency.

Chapter 4: Importance of Soil Testing and Analysis

Chapter 5: Sampling

Sample Collection and Processing Purpose of Soil testing and analysis, selection of field, Method of Soil Sample collection Methods of soil sample processing, precautions during soil collection & processing, Preservation labeling and Storage of soil samples, various types of methods used for collection

Chapter 6: Study of Instruments

Brief study of instruments: PH Meter, Conductivity meter, spectrometer, UV-Spectrophotometer, (Calibration, Instrumentation, applications only) use of soil testing kit and Kjeldahl's Assembly for determination of nitrogen.

Chapter 7: Introduction to Water quality parameters

Physical and chemical characteristics, turbidity, acidity, alkalinity, hardness

Chapter 8: Water treatment methods

Chapter 9: Water analysis methods

In house analysis of water.

PRACTICALS

Soil and Water Analysis & Testing Methods

- 1) Preparation of Various Chemical reagents required for soil testing.
- 2) Processing of Soil and water sampling for analysis
- 3) Determination of PH of soil and water samples using PH meter
- 4) Determination of Electrical Conductivity of Soil and water Sample using Electrical Conductivity meter.
- 5) Determination of Organic Carbon by wet Oxidation method of soil sample.
- 6) Determination of available Nitrogen from Soil Sample.
- 7) Determination of available phosphorus from soil sample.
- 8) Determination of available Potassium from soil sample.
- 9) Determination of Calcium Carbonate from soil sample.
- 10) Determination of micronutrients from soil sample.
- 11) Determination of lime requirement of soil.
- 12) Determination of Gypsum requirement of Soil.
- 13) Preparation of soil test report, Interpretation of result and fertilizer recommendation.