AMH04 FUNDAMENTAL OF SOIL SCIENCE

UNIT-1 THEORY

1.1 Composition of earth's crust, soil as a natural body – major components.
1.2 Eluviations and alleviations formation of various soils.
1.3 Physical parameters; texture- definition, methods of textural analysis, stock's law, assumption, limitations, textural classes, use of textural triangle;
1.4 Absolute specific gravity/particle density, definition, apparent specific gravity/bulk density- factors influencing, field bulk density.
1.5 Relation between BD (bulk density), AD- practical problems.
1.6 Pore space- definition, factors affecting capillary and non-capillary porosity,
1.7 Soil colour- definition, its significance, colour variable, value hue and chroma.
1.8 Munsellcolour chart, factors influencing, parent material, soil moisture,
1.9 Organic matter, soil structure, definition, classification, clay prism like structure,
1.10 Factors influencing genesis of soil structure, soil consistency, plasticity,
1.11 Atterberg's constants.
1.12 Soil air, air capacity, composition, factors influencing, amount of air space, soil air renewal,
1.13 Soil temperature, sources and distribution of heat,
1.14 Factors influencing, measurement, chemical properties, soil colloids,
1.15 Organic, humus, inorganic, secondary silicate, clay, hydrous oxides.
1.16 Ion exchange, cation-anion importance, soil water, forms,
1.17 Hygroscopic, capillary and gravitational, soil moisture constants, hygroscopic coefficient,
1.18 Wilting point, field capacity, moisture equivalent,
1.19 Maximum water holding capacity, energy concepts, PF scale, measurement,
1.20 Classification- aerial photography- satellite of soil features
1.21 Their interpretation; soil orders; land capability classification;
1.22 Soil of different eco-systems and their properties, Pedogenic process.
1.23 Objectives of soil science research institute in India (NBSS&LUP, ISSS, and LTFE & NSSTL).
1.24 Management of Soil Crusting, Soil Compaction and Soil Compression.
1.25 Soil Biology benefits and harmful effects.
1.26 Methods and objective of soil survey,
1.27 Remote sensing application in soil and plant Studies, Soil degradation.

UNIT-2 PRACTICAL

2.1 Collection and preparation of soil samples, estimation of moisture, EC, pH and bulk density.
2.2 Textural analysis of soil by Robinson's pipette method.
2.3 Description of soil profile in the field.
2.4 Determination of Soil colour using Munsell Chart.
2.5 Estimation of water holding capacity and hydraulic conductivity of soils.
2.6 Estimation of Infiltration rate using double ring infiltrometer method.
2.7 Determination of pore space of soil.
2.8 Determination of filed capacity and permanent wilting point of soil.

2.9 Aggregate size distribution analysis of soil.
2.10 Air capacity of soil by field method.

Reference Books:

1. Brady Nyle C and Ray R Well, 2014. Nature and properties of soils. Pearson Education Inc., New Delhi.
2. Indian Society of Soil Science, 2002. Fundamentals of Soil Science. IARI, New Delhi.
3. Sehgal J. A., 2005. Textbook of Pedology Concepts and Applications. Kalyani Publishers New Delhi.